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# PORTLAND CEMENT STUCCO









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# FOREWORD



FOREMOST among the devices which lend individuality to architectural expression are texture and color. With these the architect enhances form or design, imbuing it with warmth, character and charm. The degree of ultimate success in attaining distinctive appearance depends upon the adaptability of the material used and upon the skill of the craftsman who interprets and executes the ideas of the architect.

It is the aim of this book to present the story of texture and color in portland cement stucco, together with the practical technique of its application, in such a way that this organized knowledge will be of genuine help to the architect and the craftsman. It should aid in a better interpretation of the ideas of texture and color, which are usually more intangible and therefore more difficult to communicate than are ideas of design.

The nomenclature used to identify the textures has been chosen with a view to filling a well recognized need for such a system of designation. It is logical and definite and will, it is hoped, lend itself to permanent, universal use. As the final choice of any texture in any particular instance depends upon its ability to harmonize with the architectural style used, this principle of unity has been taken as the basis for the selections made.





# "THE PRUSSIANS INVADE MIRABEL"

A SCENE FROM THE PHOTOPLAY "LOVE AND GLORY"—PRODUCED BY UNIVERSAL PICTURES CORPORATION

All the beauty of this little village nestled in war-torn France is picturesquely shown in the above scene. The moving picture industry has realized in modern portland cement stucco the best medium for reproducing true effects of aged walls and surfaces.



# PROGRESS *in* STUCCO SURFACING



URING the past century, a decline in the artistic appearance of the moderate priced dwelling has been apparent to all who have made even a casual review of this field. Several factors have been largely responsible for this. The 19th Century was an age of industrial progress. Contrary to the customary idea that such progress results in a betterment of living conditions is the fact that an industrial age creates a demand for quantity in advance of the demand for quality. With this condition, workmanship sometimes suffers along with indifferent appreciation of good design.

For a time it seemed that ugliness in homes threatened to overcome cities and their suburbs. Within the past decade, however, home owners have begun to realize that those things which bring satisfaction and happiness can be built into the modest dwelling as well as into the more expensive one. The creed that beauty and dignity can be achieved without the sacrifice of practicability and economy is being accepted, and this may be the beginning of an American Renaissance in domestic architecture.

Craftsmanship is awakening to its responsibility. Invention is developing worth-while methods and economies in the construction of small houses. Leaders in architecture are becoming interested and are creating along new lines. New types of dwellings, new color schemes, new effects in design, are the results of these efforts. And in this transformation, concrete, in the form of portland cement stucco, is playing a leading role.

From the use of a primitive plaster in the construction of the relatively crude huts of the Egyptians and Grecians to the artistic



treatment of modern stucco by the artisans of today is a story of such length that it cannot be recounted here. In a manner as well as he knew how the craftsman of other days used the only tools available to apply the material most suitable as a covering for his walls. If his tools were crude, the resulting surface was rough-textured. Permanence was strengthened and beauty enhanced in various ways at different times. Permanence of structure with beauty of appearance is a principle to follow in any construction, and in the wall surfacing of homes portland cement stucco fulfills the requirements of such practice. With the material we now have, it is no great wonder that the present stucco work is being accomplished so successfully.

The variety of artistic possibilities of stucco in modern use is rapidly being appreciated by the building professions. Every architect knows the essentials of plastic ornamentation and realizes the merit of portland cement stucco as a medium of expression. He appreciates its adaptability as a material with which a myriad of effects can be produced by variations in mode of application. Its ability to hold and enhance color is commendable, and especially so since appreciation of color in wall surfacing is now at a high level. More than ever before, textural and color variations can now contribute their full proportion to the beauty of an architectural conception.

To accomplish the artistically designed and executed house, it is necessary that consideration be given to the natural surroundings — trees, shrubs, vines and other elements of the setting — so they may blend harmoniously with the texture and color chosen. If the surface is to show the full effects of plasticity, with all its depth and life, the details of the texture should be accentuated. Under weathering the tool marks will stand out in the texture as do the brush marks on the surface of an oil painting. These should be a frank exhibition of the technique of application. Then again, a variation of pleasing appearance is given by producing a texture of smooth surface over a rougher textured base. While such work does not strictly



conform to emphasizing the application of the material, yet in its many variations it has a beauty similar to that of the gracefully weathered walls of ancient structures.

A generous use of colors is apparent in the newer stuccoed effects. There is, and has been, in the past few years a decided change taking place in the design and in the color treatment of the American home. Color in surfaces is now chiefly secured by the addition of mineral pigments which are mixed by grinding, although colored aggregates are often used. The former method makes available a wider variety of colors, especially in the more pronounced tints and also makes available colors which no single aggregate can supply.

The ability of any color chosen to harmonize with the texture, the architectural style and the natural setting of the house is of primary importance. The ultimate artistry of a design and its most successful rendition can be accomplished only when the three factors of appearance — form, texture and color — are artistically balanced.







REDUCED FROM A 36 BY 42 INCH AREA OF WALL

## SPANISH

This shows but one of the many possible combinations of color and texture. The deeper tones of pink and buff in coloring this wavy, trowel-marked texture are often artistically combined in a polychrome effect of rare beauty.





Residence of Charles Seyler, Jr., Los Angeles, California

Morgan, Walls and Clements, *Architects*

**S**PANISH architecture vividly reflects the Moorish influence in a pliant and varied style, generally in rich tones and intricate design in the wall surfacing. In the patio, which is the center of family life, the Oriental is seen in the bold use of highly colored stucco, glazed polychrome tiles and terra cotta. The coarser textures as originally used are rich and fanciful in design, and softly toned by the sweep of the brush, which is distinctively and characteristically Spanish.

Architectural embellishments such as iron window grilles, balcony rails, canopies and tapestries relieve the tone of the unbroken surfaces of interior as well as exterior walls. The finish of the stucco harmonizes with the architectural expression demanding a full sweep of blank walls, and greatly softens the general uniformity of such an architectural treatment.



# P O R T L A N D   C E M E N T   S T U C C O



1. Using a round-cornered trowel



2. Strokes in all directions



3. A left horizontal stroke



4. Irregular overlapping



5. Finishing with the trowel



6. A wavy, trowel-marked finish



## SPANISH



IN CREATING this texture the application of the finish coat mortar is heavy. The strokes of the trowel occur in all directions, upward to right and left, as well as occasional horizontal and vertical cross strokes, as shown. To the experienced plasterer these varied strokes might denote the work of an amateur, but nevertheless such is the way in which the effect of this texture is obtained. A trowel with rounded corners (Fig. 1) is used to prevent straight line-markings from appearing in the finish. The directions of the strokes are curved and varied. A full trowel of mortar is spread with each stroke as shown in the first few pictures. This builds up a texture of rolling ridges and hollows (Fig. 2) giving the effect of a coat of plaster thinly applied over a wall of crude stones.

After a fairly large area of wall is covered and before the mortar has completely hardened the surface is tooled down (Fig. 5) with the rounded trowel. This smooths over the hanging ledges of mortar and closes the surface pores to some extent, yet leaves the wavy effect that is very apparent when light strikes shadows across the surface (Fig. 6). No finish troweling should be done that will break down or smooth out these hillocks. Best results are obtained by using a fairly stiff mortar which stands as placed by the trowel. A good suction in the browning coat will help considerably in accomplishing this.



P O R T L A N D   C E M E N T   S T U C C O

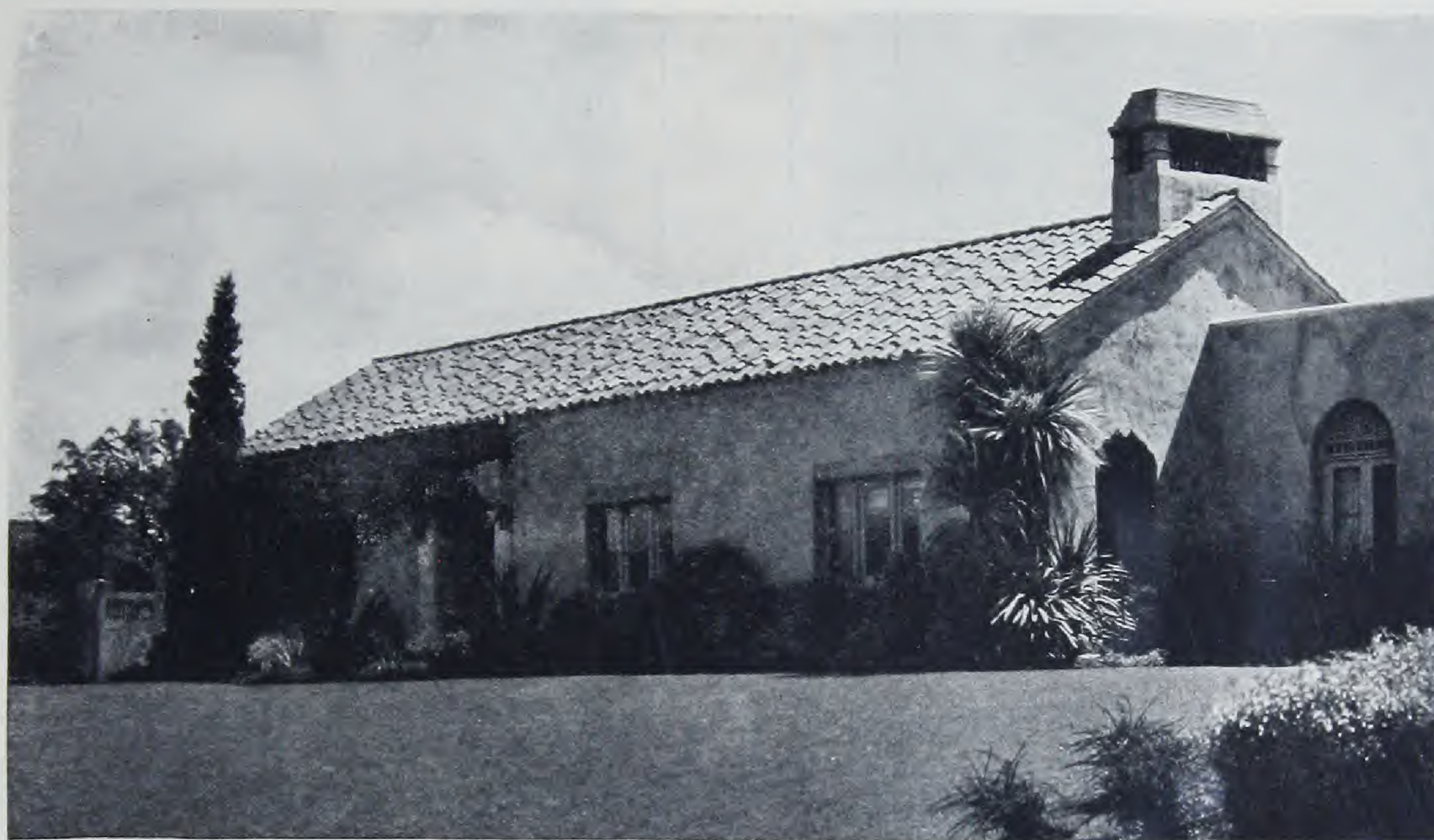


REDUCED FROM A 36 BY 42 INCH AREA OF WALL

MEXICAN

Rich colors in polychrome effects are used, ranging from a light buff to the deep copper tone shown here. The texture, smoothly irregular, represents the plaster crudely applied with the hand over ancient adobe walls.





Residence of E. M. Halliday, Santa Monica, California

Withey and Davis, *Architects*

**T**HE predominating influence on Mexican architecture is naturally Spanish. However, a charming irregularity in design marks the difference in the two styles. The distinctive mark of the Mexican is, perhaps, the concentration of ornament, which is used almost to excess, contrasting effectively with the great, bare expanses of plain surfaces which are so typically Spanish.

A heavier style is apparent — an outgrowth of the rugged adobe walls erected by the Mexican builders of centuries ago. This style still persists to some extent, but modern adaptations to fit it to twentieth century requirements are rapidly making the Mexican style comply with American needs. Likewise, certain of its features have furnished inspirational motives for the surface decorations seen in many unusual architectural renditions.



# P O R T L A N D   C E M E N T   S T U C C O



1. Irregular application



2. Note trowel strokes



3. Working up texture



4. Preliminary appearance



5. Smoothing with trowel



6. A smooth, uneven surface



## MEXICAN



VERY similar to the Spanish type of texture so far as method of application and appearance goes, is the Mexican — so called because it is as typical as any of the stucco textures most used in the Southwest. Using the rounded-corner trowel which leaves only curved lines, a rather heavy finish coat is applied (Fig. 1). The strokes are in all directions, each trowelfull of mortar overlapping or crossing the one previously applied (Fig. 2).

Working over this coat (Fig. 3) brings out fantastic, irregular weavings in the surface even more so than in the Spanish texture. It is at this point that polychrome effects in coloring are introduced by adding daubs of varicolored mortar here and there over the surface.

This texture should be more plastic for finishing than the Spanish as the wall is brought to an almost smooth surface (Fig. 5) by troweling. No trowel marks should be seen. Although it is not an even surface the pores of the stucco are almost completely closed by the troweling. The effect is the same as if the finish had been completed by working it with the palm of the hand (Fig. 6).





REDUCED FROM A 24 BY 48 INCH AREA OF WALL

### CALIFORNIAN

Here a rough troweled surface has been partially smoothed by rubbing with a piece of burlap. The use of the warmer tints of tan or buff harmonize well with such a texture.





Residence of John Shepherd, Los Angeles, California

Paul R. Williams, *Architect*

**N**O CATEGORY of domestic architecture would be complete if it did not include the styles of houses seen in the communities along the Pacific coast today. Spanish and other Latin influences predominate especially in California, and are quite strongly reflected in the reproductions of the Spanish hacienda or of the Italian villa.

Various features of these styles have been utilized most fittingly in bringing the modern California house to the point where it is ideally suited to the climate. Small window area is the rule with their excess of sunlight. Roofs, low pitched or flat are permitted. With these go broad expanses of wall and a general use of color in a great variety of tints, like the many colorful earths abounding in this delightful region.



# P O R T L A N D   C E M E N T   S T U C C O



1. Full sweep spreading



2. Creating the texture



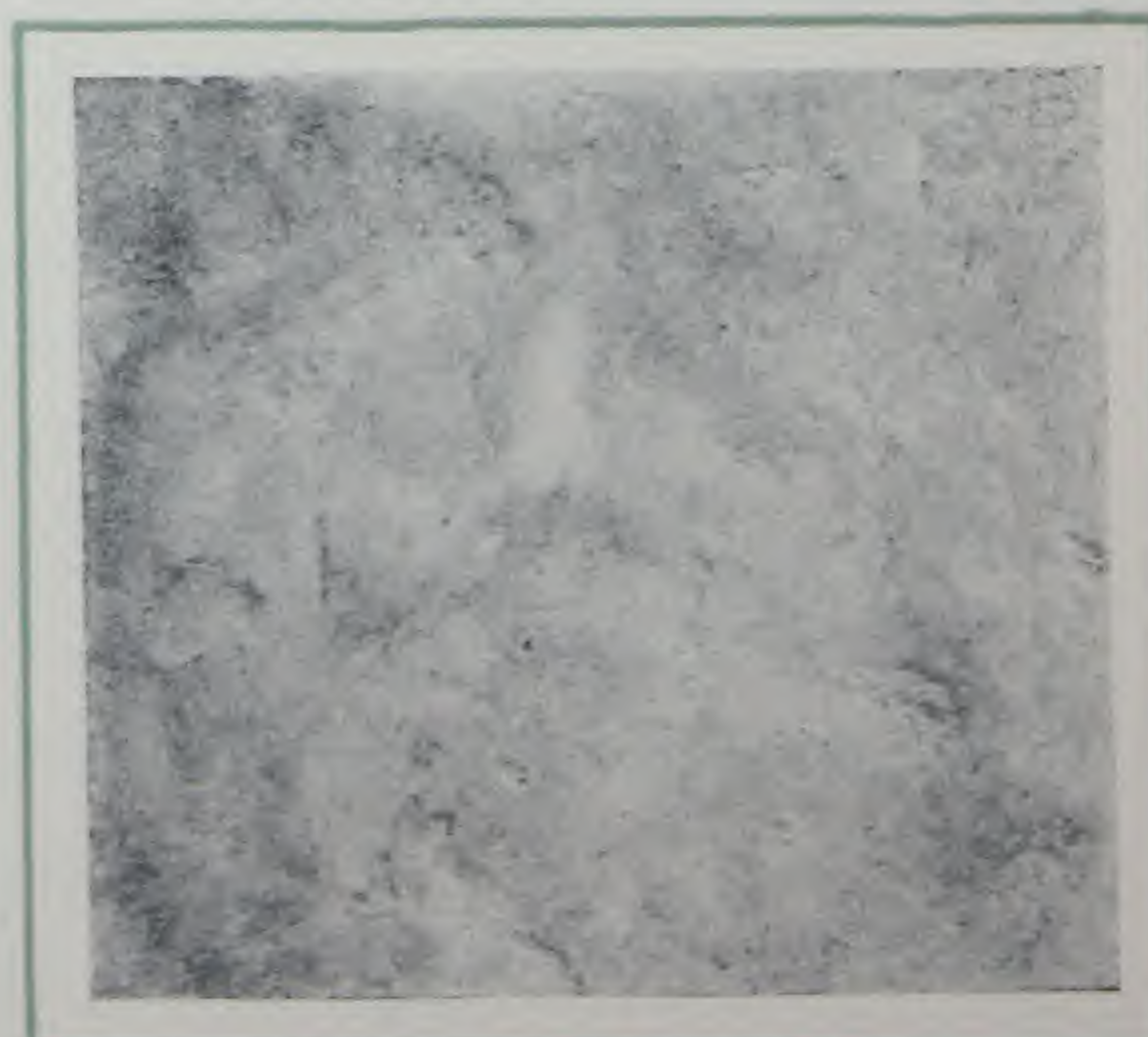
3. Preliminary appearance



4. Rubbing with burlap



5. Troweling high points



6. A rubbed troweled finish



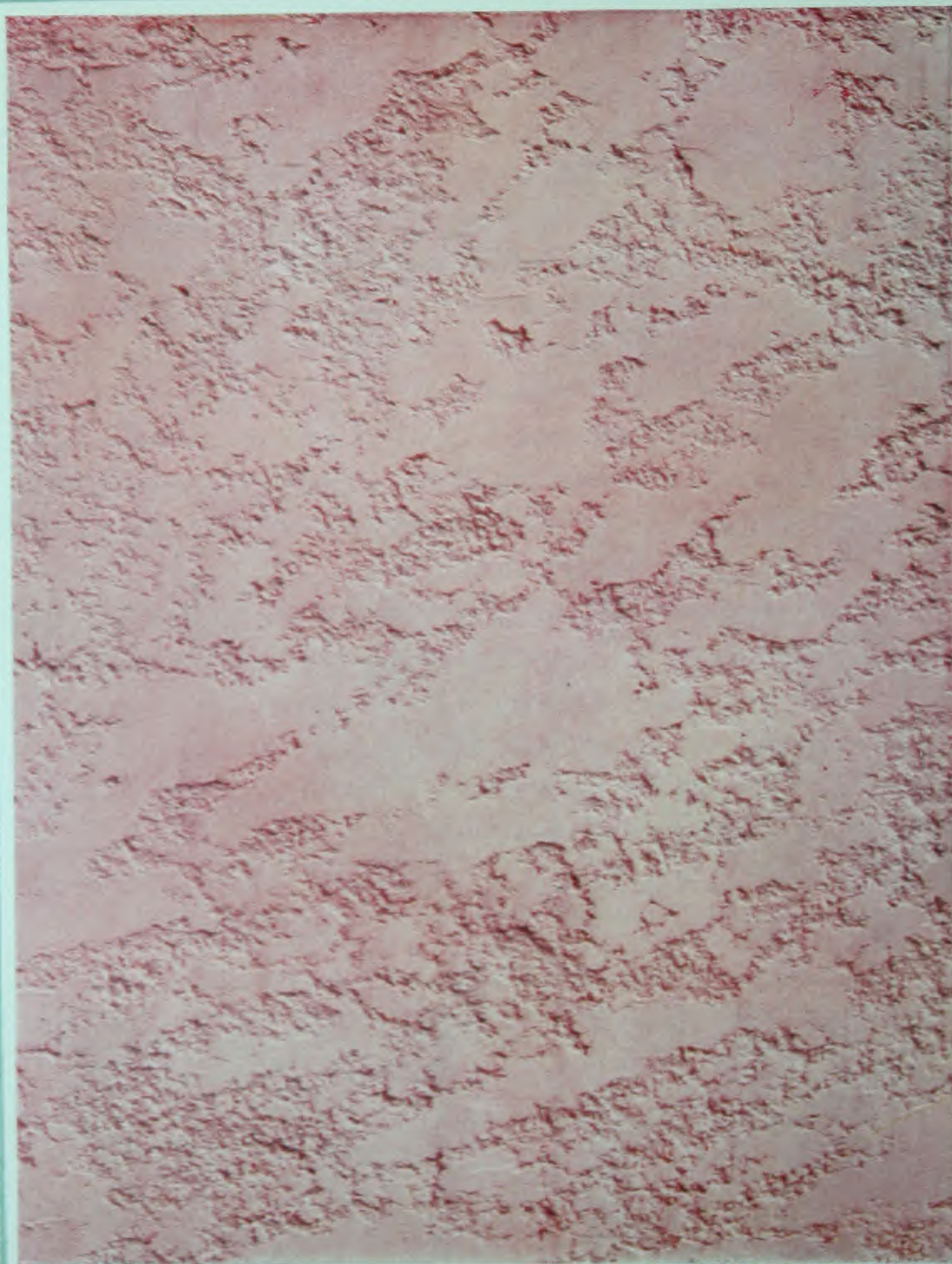
## CALIFORNIAN



TROWEL with rounded corners is used to apply the finish mortar coat of this texture. A full trowel of mortar is used and spread in all directions (Fig. 1 and 2) allowing the sweeping applications to remain as placed without additional smoothing action. There are no straight line markings, the depressions and ridges occurring in criss-cross fashion (Fig. 3). Before the mortar hardens, the area first covered is rubbed down briskly with a wadded piece of burlap (Fig. 4). This treatment rubs off overhanging edges and any loosely attached portions of the coat and evens the whole surface to a coarse texture of wavy, irregular appearance with hills and valleys — an effect like that given in plastering over a rough stone wall.

The final treatment consists of smoothing the higher areas with a trowel, creating small, flat, smooth spots, as highlights against the relatively coarser remaining surfaces. This troweling, and to some extent the rubbing, also tends to close the pores of the stucco over the whole surface. Troweling high areas is illustrated in Fig. 5. The final appearance of the texture is shown in Fig. 6.





REDUCED FROM A 36 BY 42 INCH AREA OF WALL

## ITALIAN

A free use of the paler shades of pink, buff or cream is characteristic of the Italian manner. The texture is mostly rough cast, the variations in the surface being troweled smooth in spots.





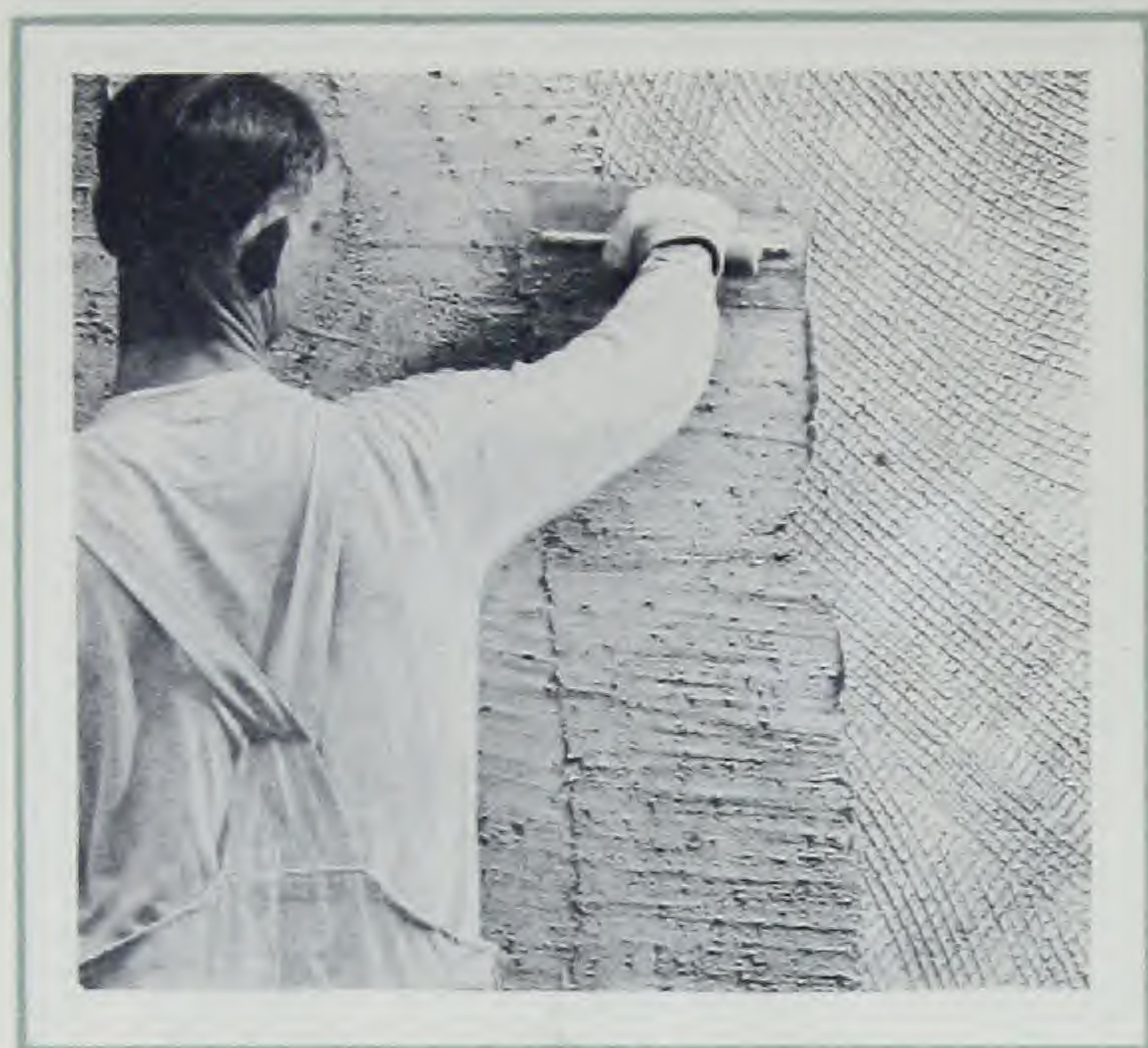
Residence of M. Taussig, Wilmette, Illinois

Alfred S. Alschuler, *Architect*

**I**N PRESENT day adaptations of the Italian style the designer purposely disregards many features which do not possess the utility required by modern use. He retains in general those which by their beauty or usefulness make them invaluable in the portrayal of this very popular expression. Typical features possessing one or the other of these attributes include the graceful, wreathed column of Italian Romanesque; the charmingly detailed ornamentation over the entrance; the simple, circular arch of the window or portico; the touches of ornamental iron work placed here and there over the exterior, and the well formed proportions of the house itself. As a style particularly adaptable to all climates, the Italian is destined to widespread use in this country.



# P O R T L A N D   C E M E N T   S T U C C O



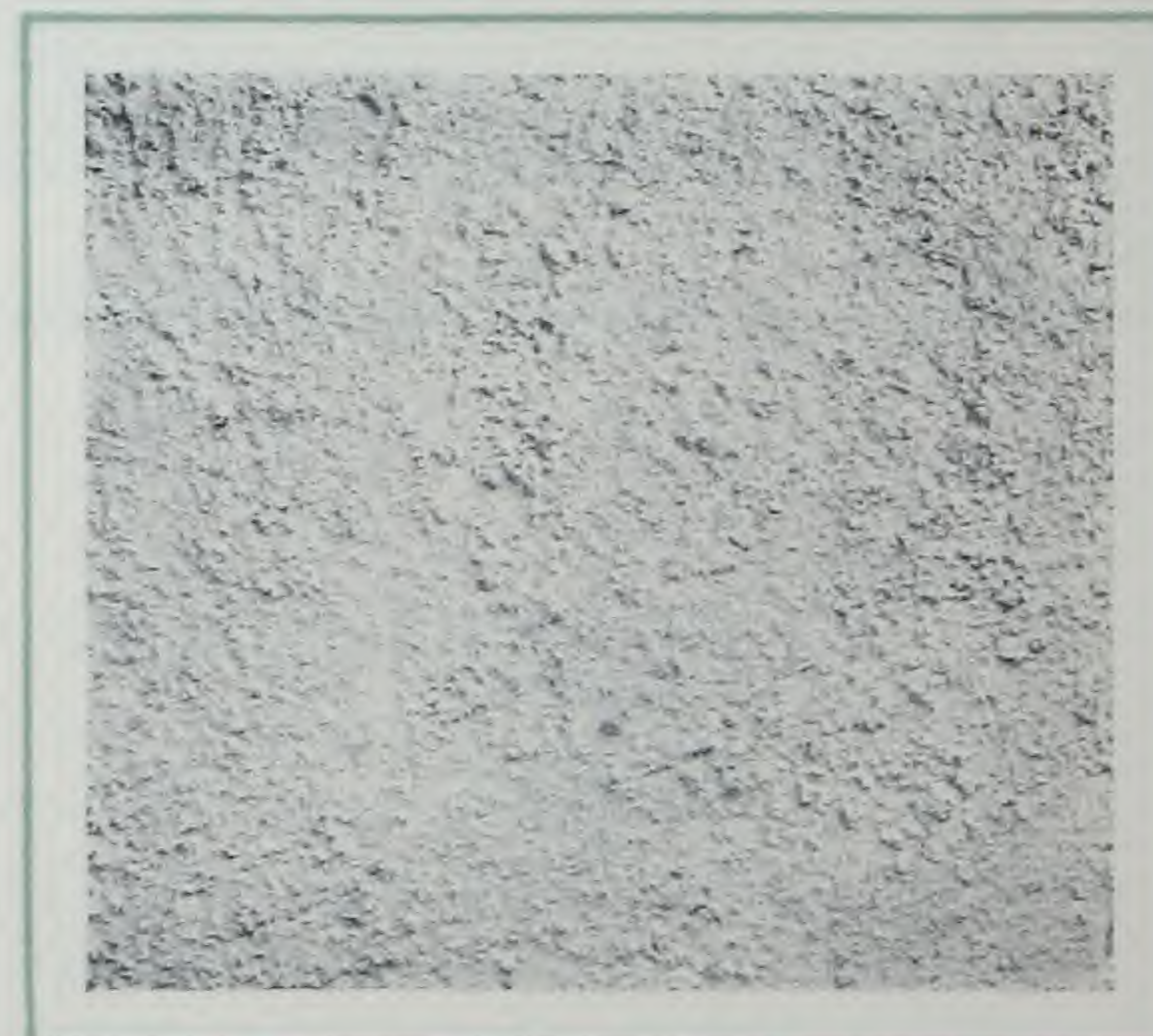
1. Applying thin backing coat



2. Spatter dash application



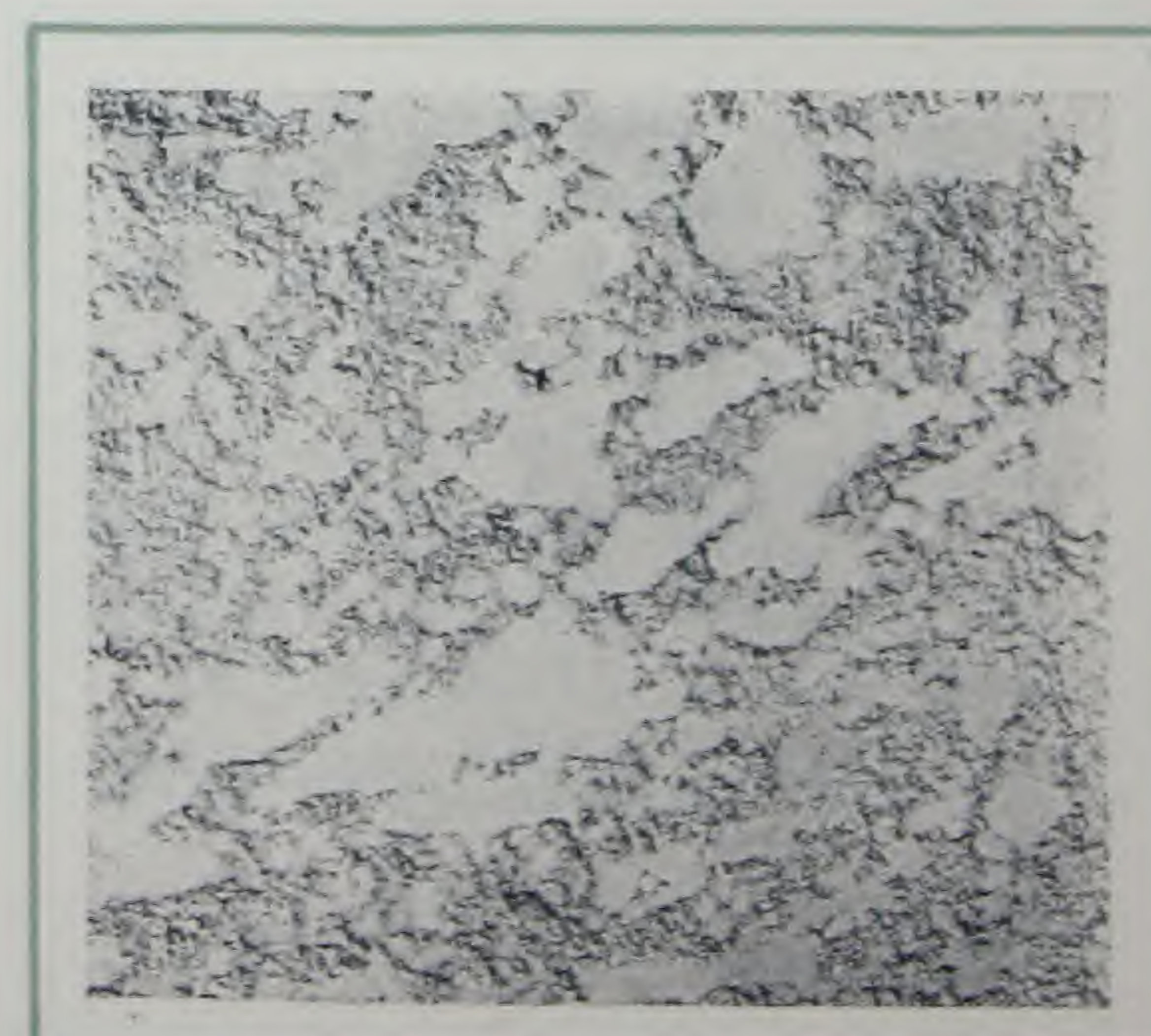
3. Method of holding bucket



4. Spatter dash finish



5. Troweling dashed surface



6. A troweled, spatter dash finish



## ITALIAN



IT IS advisable in making this texture to apply first a very thin under-coat of wet mortar (Fig. 1) to insure that a uniform color will be had over the entire wall, without any spots showing which the dash coat might not cover. An ordinary whiskbroom is best for dashing, though some may prefer a bundle of light reeds for a slightly different effect. The most convenient way to handle the bucket of mortar in applying this spatter dash coat is shown in Fig. 3. Dash small quantities of mortar with quick strokes of the broom (Fig. 2). Cover only a small area — not more than 30 square feet of wall — with the dash before finishing, as it is necessary to finish this before any hardening occurs. A spatter dash coat dries out more rapidly and hardens more quickly than any other. Finishing the dash (Fig. 5) is best done by placing the trowel flat against the wall and drawing it evenly across the face of the dashed surface from left to right. A smoothing return stroke may be made to erase possible trowel marks. Variations will occur in this texture according to the time elapsing between dashing and troweling the dash, so that this time should be constant for a uniform appearance (Fig. 6). Differently colored mortars used in the finishing and dash coats will produce a polychrome appearance when troweled.





REDUCED FROM A 36 BY 42 INCH AREA OF WALL.

### ENGLISH COTTAGE.

The shading of this texture is accomplished by feathering the material into minute, irregular weavings and surfaces with the edge of the trowel. The colors used are the softer effects of shaded browns, greys and tans.





Residence of William Lucking, Cincinnati, Ohio

R. C. Hunter and Brother, Architects

THE cottages of England have never through the ages needed ornamentation to make them interesting. There is a tremendous variety of types in this style, making use of many materials of construction, but there is a sincerity of purpose behind every feature of the English Cottage style which must be understood in a correct interpretation of this charming dwelling. Doors are invariably low, since the ceilings are low. Window openings must be small or consist of a group of small window units. Sharp gables of definite lines go with the steep roofs which the rugged winters of England require. Half-timbered exteriors should be real rather than mere pretenses of this sturdy construction. Wavy ridge lines are the mark of years of useful life.



# P O R T L A N D   C E M E N T   S T U C C O



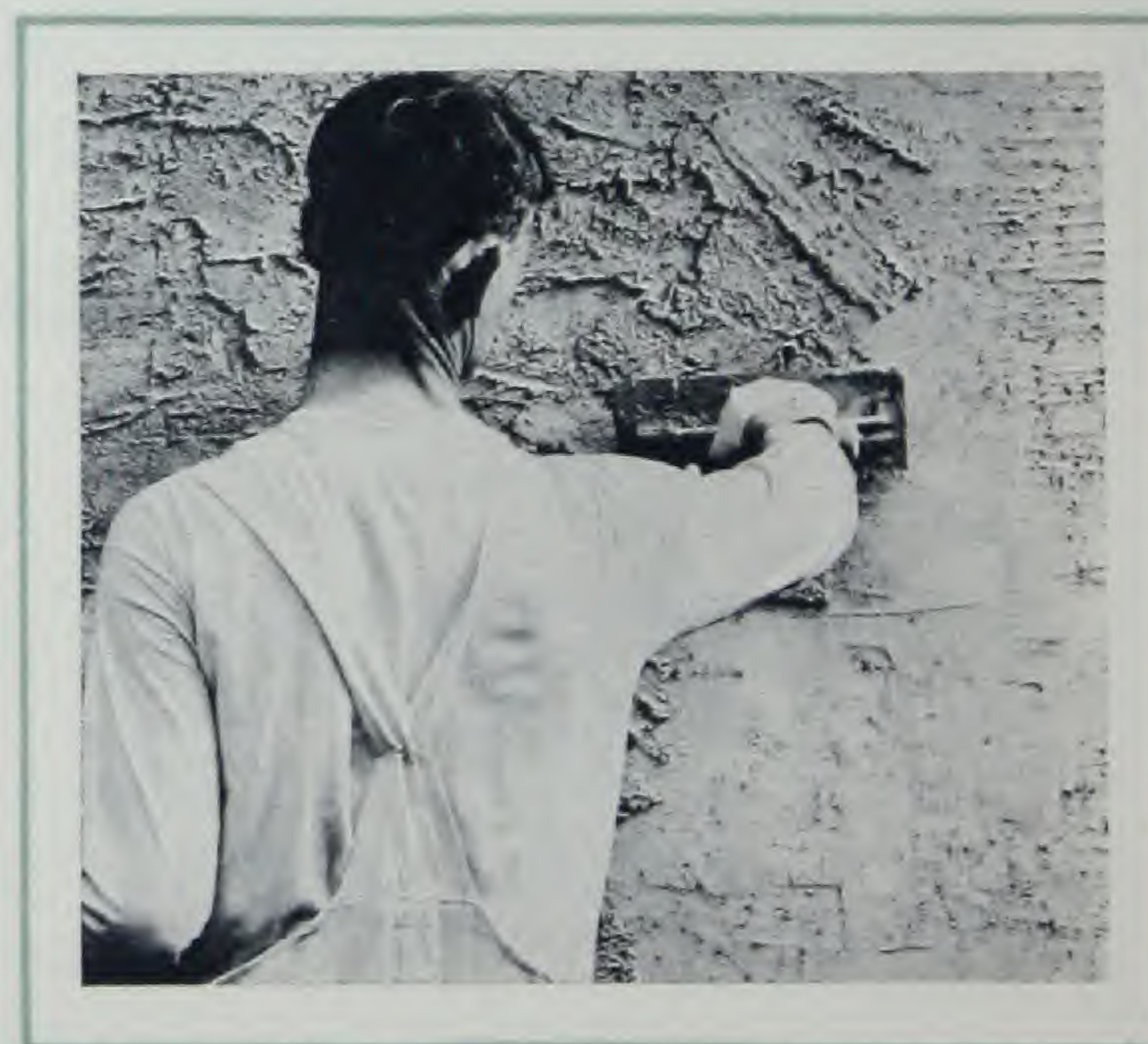
1. Applying thin backing coat



2. Feathering with square trowel



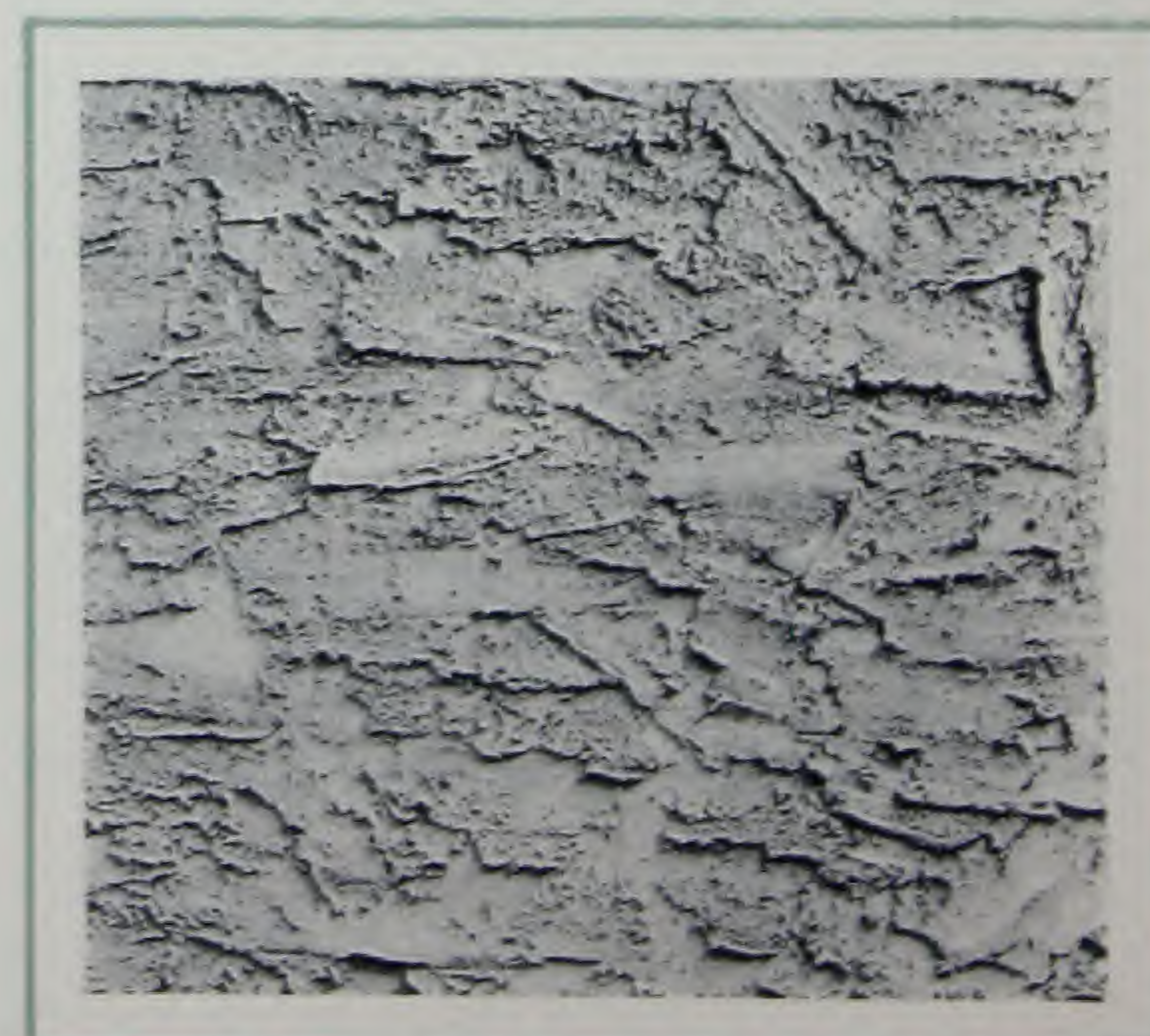
3. Pinched off in all directions



4. Twisting, feathering application



5. Showing small trowel of mortar



6. A fine, leaflike finish



## ENGLISH COTTAGE



VERY thin preliminary finish coat is first applied (Fig. 1) about one-eighth inch in thickness. This is left as applied, without further troweling and forms a background coat as well as a plastic surface on which to work this final finish (Fig. 2). A small amount of mortar — about a handful — is taken on the trowel (Fig. 5). The right size of this pat of mortar for any desired variation of this finish must be found by trial. Apply with short, twisting strokes, pinching off the pat of mortar onto the surface by having the trowel at an angle to the wall as the mortar is placed (Fig. 2, 3 and 4). The strokes should be made irregularly in all directions, regardless of location. The more these strokes are varied the more beautiful is the finished texture. Avoid having too many vertical or near-vertical strokes. By twisting the trowel as the pat of mortar is applied, slightly curved ridges will be formed (Fig. 3).

Many variations of this type of texture are possible by simply varying the amounts of mortar on the trowel, the directions and lengths of the strokes, the pressure and twisting motion given the trowel. Finer, leaflike, more delicate textures are suitable for the smaller residences (Fig. 6) while the heavier applications made with more mortar and stronger strokes and applied in a freer fashion go with the larger type of house.





REDUCED FROM A 36 BY 42 INCH AREA OF WALL

### COLONIAL

Devoid of textural ornamentation, this sand-floated finish is of sufficient body to hold the lighting tones thrown upon it. The lighter tints are the rule, such as white, ivory or occasionally a pale cream yellow.





Residence of Florence Day Oskison, Great Neck, N. Y.

Oswald C. Hering, *Architect*

**P**ERHAPS the most apparent characteristic of the Colonial house is its simplicity of design, the ruling principle of its Puritan originators. This severity is broken by the decorative treatment accorded door and window openings. The former treatment consists of a pedimented doorway with a more or less decorated entablature usually supported by coupled columns, elaborate glass lights being used around the door itself, making a simple but pleasing composition for the entrance.

The windows are invariably multi-paned and usually of casement and dormer types with outside wood shutters. They are usually placed flush with the exterior walls. Shingles of varying widths and occasionally a Colonial railing at the top as shown here complete the roof treatment. The use of stucco as the exterior surfacing material is most suitable and harmonious with this design.



# P O R T L A N D   C E M E N T   S T U C C O



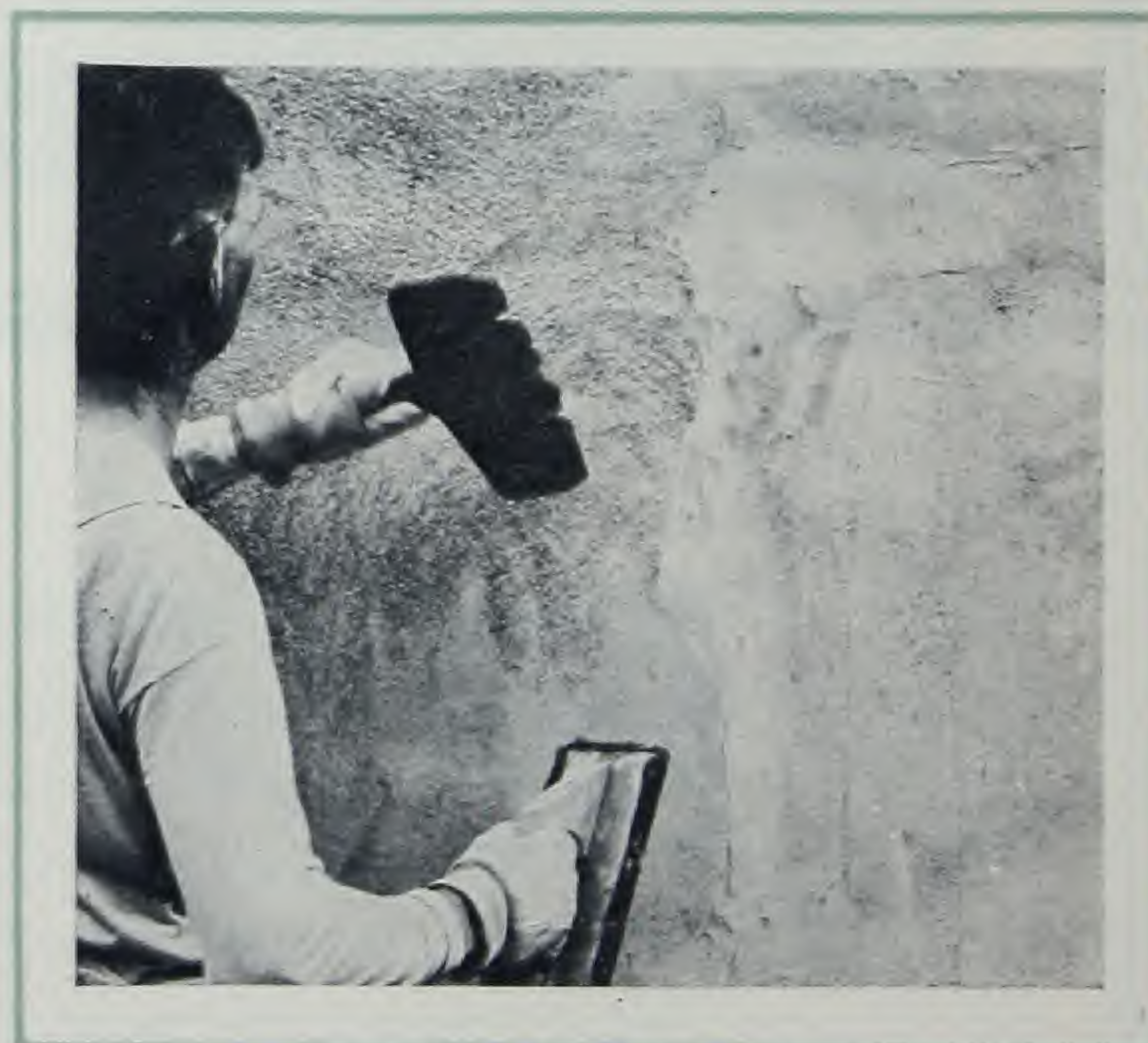
1. Applying browning coat



2. Floating browning coat



3. Applying finishing coat



4. Wetting with brush



5. Carpet floating



6. A smooth, sand-floated surface



## COLONIAL



AS THE Colonial or sand-floated texture is one of the most popular finishes, every plasterer should be well acquainted with the best method of making it. To get a regular, even surface a very thin coat of finish should be used. This is applied and spread as shown in Fig. 1. The browning coat has been rubbed over with the wood float, using a circular motion (Fig. 2) which produces the even, but comparatively coarse surface shown.

When the browning coat is completely dry a thin and tight finish coat is spread (Fig. 3). Again using the circular motion, but this time with a carpet float, this coat is thoroughly rubbed down (Fig. 4 and 5). As it is being carpet-floated the surface should be sprinkled with a plasterer's brush dipped occasionally into a pail of water (Fig. 4). This carpet rub results in an even, smooth texture with light markings of the circular rubbing showing (Fig. 6). A surface so finished has much more life to it than a plain sand-floated texture would have, the slight wetting softening the surface and exposing the sand particles of the mortar for an interesting finish.



P O R T L A N D   C E M E N T   S T U C C O



REDUCED FROM A 36 BY 42 INCH AREA OF WALL

MODERN AMERICAN

This rough-torn texture of buff color can be given an interesting tapestry effect as shown here by lightly drawing a brush of a colored stain across its surface.





Residence of A. H. Maegly, Portland, Oregon

John V. Benne, Architect

**M**ODERN tendencies in domestic architecture are so thoroughly diversified that it is almost impossible to make a definite selection representative of a majority of houses seen today. The Colonial or English types find greatest favor in the East; on the Pacific Coast, the Spanish. In the South the Latin traditions of the people, French or Spanish, manifest themselves in a style of strongly European cast and great charm.

The Modern American style is not a hodge-podge of these styles, nor is it a collection of certain features from any or all of them. Large porch space, bay windows, considerable window area, moderate roof pitch with wide eaves are all marks of this expression which has as its basis sound construction and comfortable living quarters.



# P O R T L A N D   C E M E N T   S T U C C O



1. The covering application



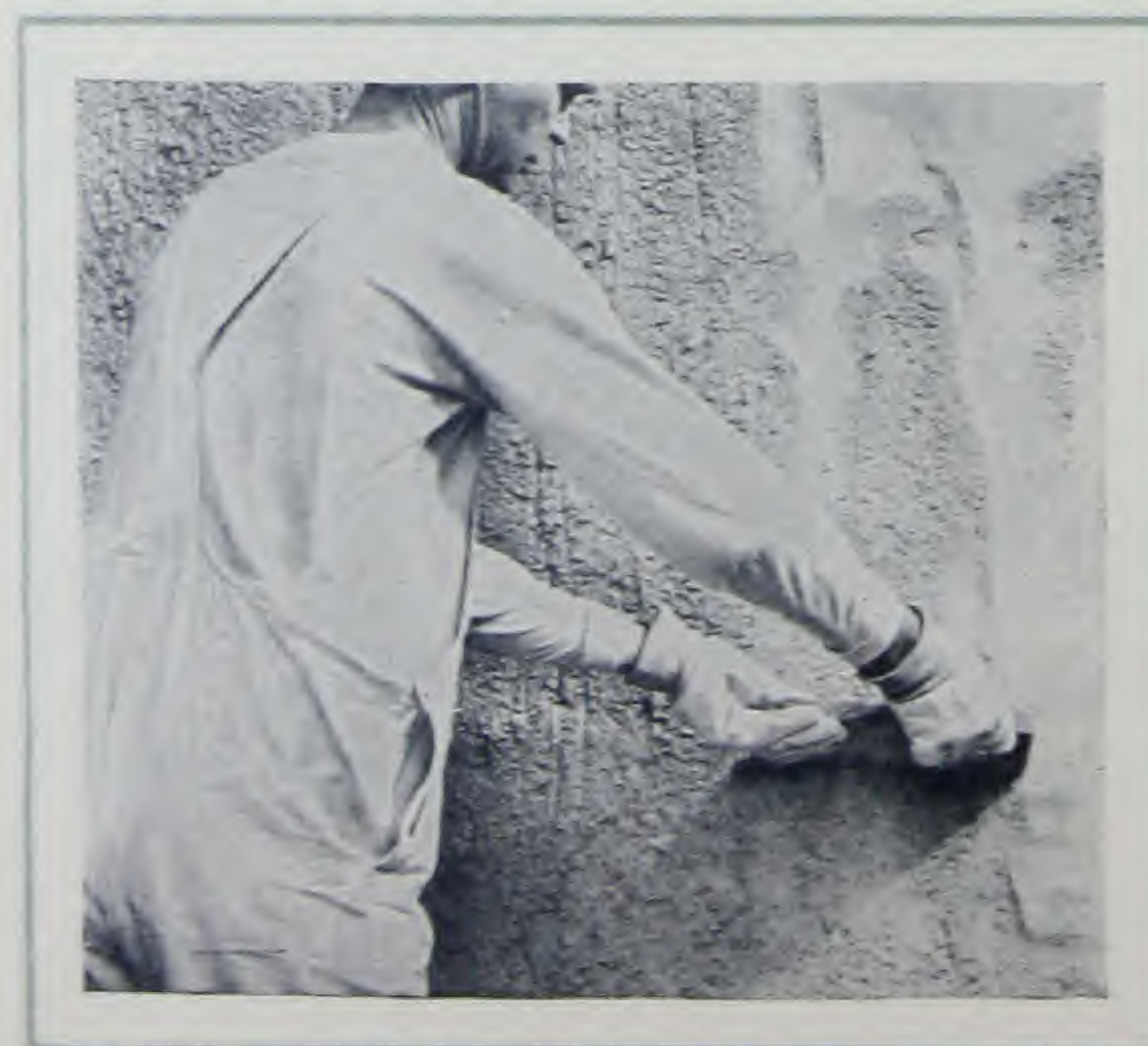
2. Full upward placing



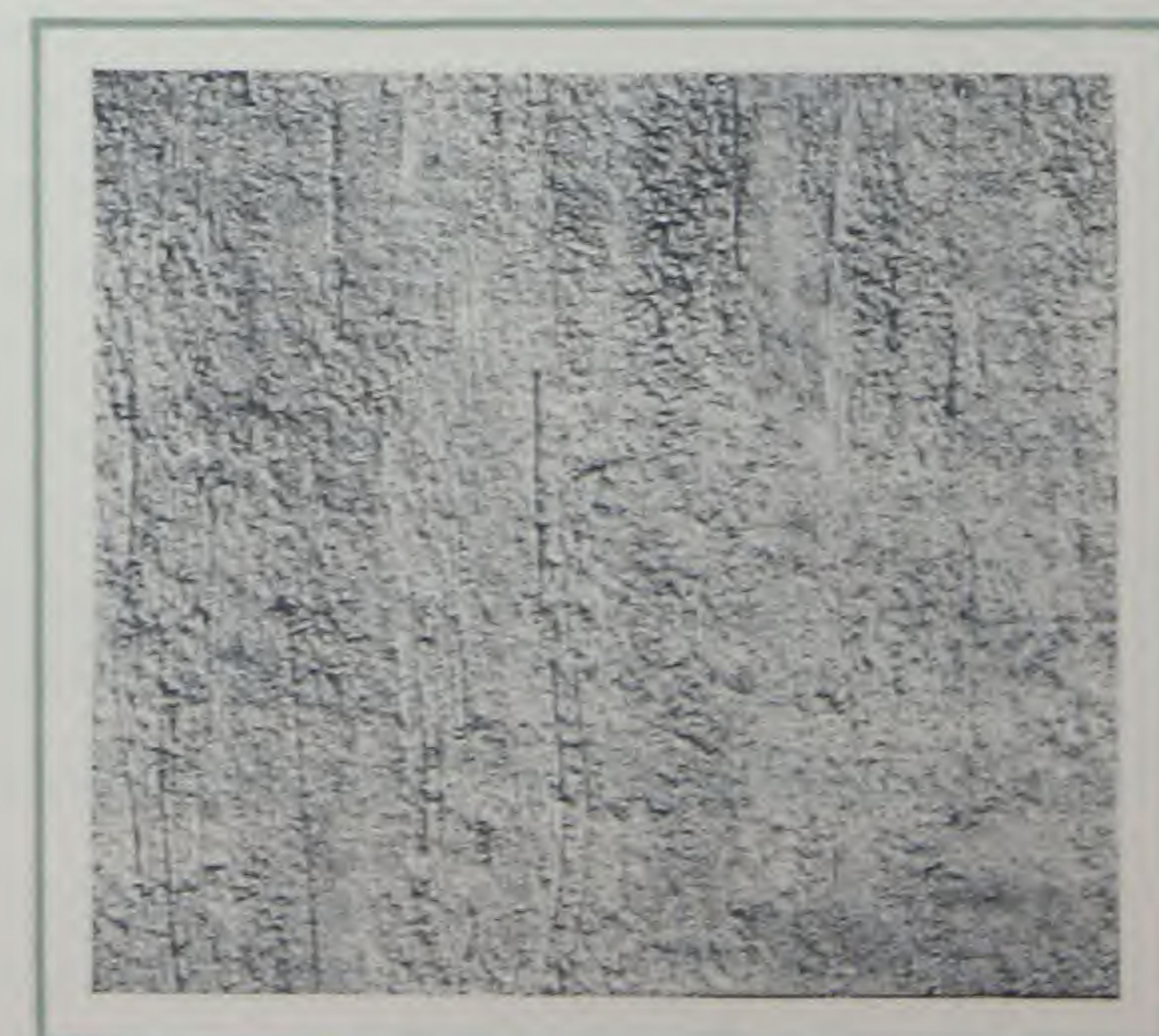
3. Preliminary finish



4. Lightly torn surface



5. Heavily torn finish



6. A soft, tapestry finish



## MODERN AMERICAN



SING the trowel, the full depth ( $\frac{1}{4}$ -inch) of coat is applied (Fig. 1 and 2). It is troweled to a fairly smooth finish but without regard to slight trowel markings (Fig. 3). Then, using an ordinary piece of board, say 10 inches in length, this surface is rough torn by drawing the board up the face of the wall. A downward stroke in tearing the surface must never be used. The method of thus tearing the surface is illustrated in Fig. 4 and 5. To lightly tear the troweled surface, the board may be held in one hand; if a heavier texture is required both hands should be used. Tilt the board at an angle with the wall as it is drawn up. The correct method is found by trying different holds and positions best suited to create an evenly torn surface similar to that in Fig. 6.

The general effect of this texture is that of tapestry. This effect can be heightened by means of color, using a different shade of mineral coloring pigment than is used in the mortar and tipping the higher points by lightly drawing the brush over the finished surface.





REDUCED FROM A 26 BY 42 INCH AREA OF WALL

### ENGLISH

The shades generally used are the more sombre tones of dark red or grey which are in keeping with the architectural style, enhancing the soft, heavy texture so appropriately used with this manner.





Residence of Dr. Fred Hodges, Locklane, Richmond, Va.

Duncan Lee, *Architect*

**T**O IMPART to a house the air of having grown in its setting is evidence of good design. This may be most easily accomplished with this style, as the distinguishing features of the English manor house include comfortable lines of sturdy construction with simple details, quietly harmonizing with the natural environment. The long sweep of steep roof slope with age-cambered ridges, the huge, homely chimney and the inviting dormer windows give such a house the effect of true, staunch friendliness. The dominant note of the English house is still further expressed in the substantial character of the stucco surfacing.



# P O R T L A N D   C E M E N T   S T U C C O



1. Full, strong strokes



2. Applied in all directions



3. Wood float application



4. Overlapping of strokes



5. Smoothing down with brush



6. A soft, heavy texture



## ENGLISH



VARIATIONS in this type of texture, from the leaflike English Cottage finish to the one described here, are many. This is, perhaps, the heaviest in form and texture that might be used and is suitable only on large, rambling structures where distance smooths out details. The wood float is used to apply the mortar coat, which varies from  $\frac{1}{4}$  to  $\frac{1}{2}$ -inch thick. The stroke is short as the mortar spread is little and in all directions, overlapping occurring wherever it may in placing the mortar (Fig. 3 and 4). The use of the float leaves a torn surface where each stroke is applied.

Following the application over a small area the finish should be softened somewhat by being brushed down with a plasterer's ordinary soft brush. Horizontal sweeps, with the brush held as in Fig. 5 are used. This uniformly curves over the rough projecting edges left by the float, rounds off the harsher lines into soft curves and smooths the surface to its final appearance (Fig. 6).





REDUCED FROM A 96 BY 42 INCH AREA OF WALL

### FRENCH TROWEL

A full trowel-swept texture, finished in the typical French grey shade, truthfully displays the technique of application.





Residence of Edward R. Jones, Highland Park, Illinois

Edward R. Jones, *Architect*

ALTHOUGH the more ornate style of the chateau is perhaps better known as exemplifying French architecture, the *ferme*, or farm house, typifies the true style which is more appropriate as a guide in small house design.

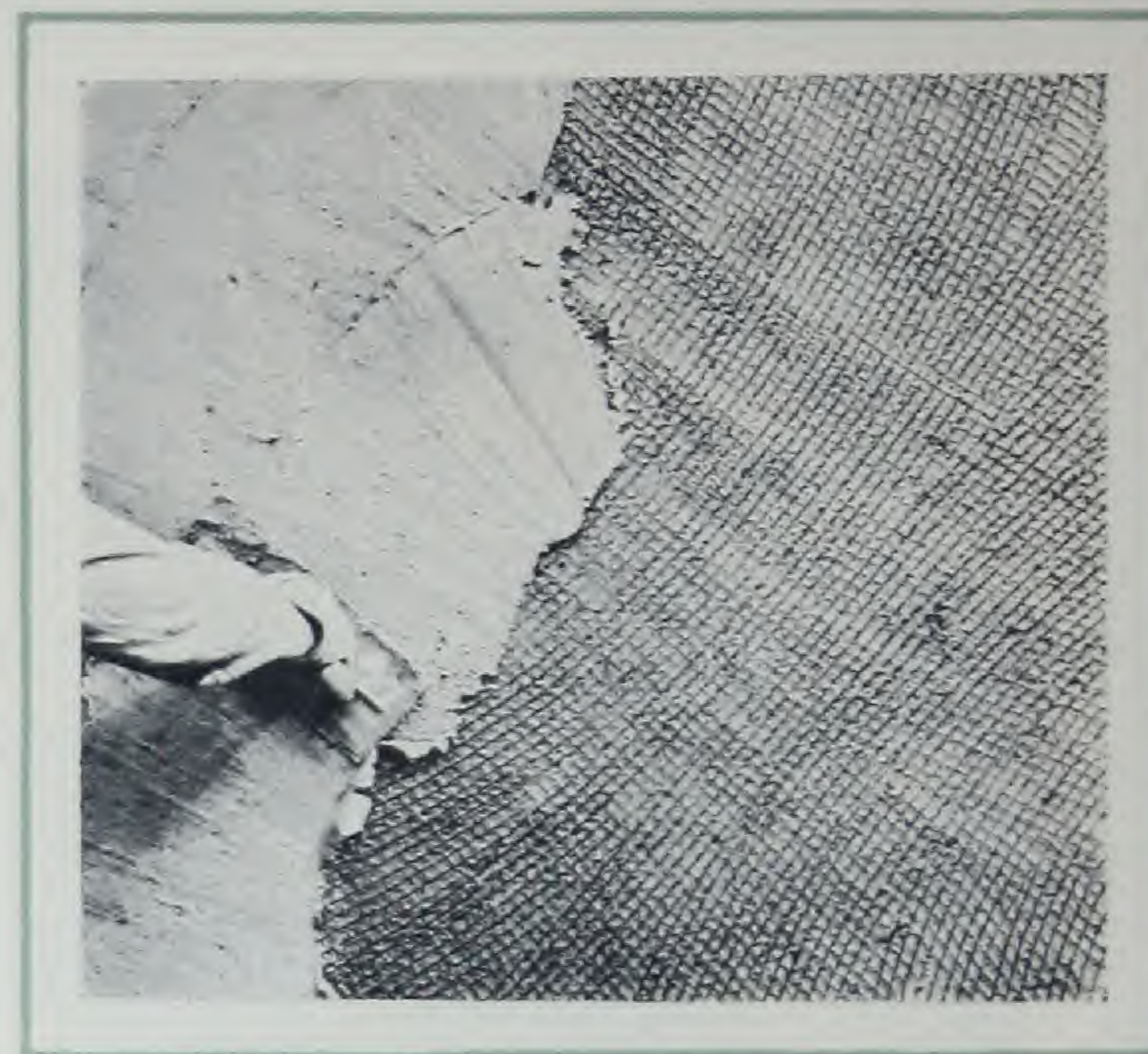
The round tower, placed in a corner of the wings and ells of the typically extended plan, is most characteristic of this type. Steep sloping roofs carried low (as the winters of northern France are stern) act as an enveloping cloak over the whole structure. As in France the farm animals may be housed in a wing, so may the modern garage be assigned a corner in this house. The capable-appearing chimney gracefully conforms with the sweeping lines of this house.



# P O R T L A N D C E M E N T S T U C C O



1. A spreading sweep



2. Natural covering strokes



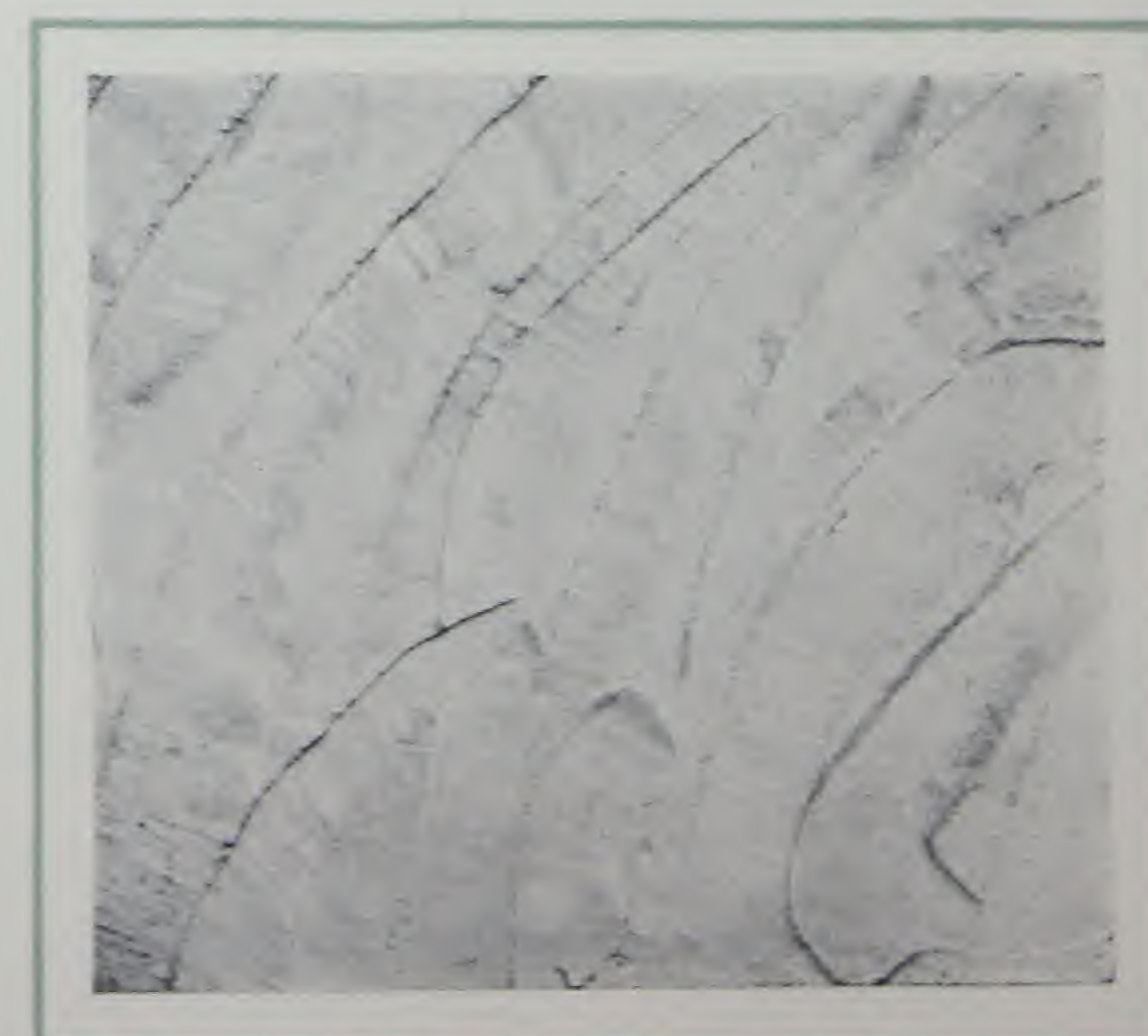
3. A full trowel of mortar



4. Irregular, overlapping strokes



5. Trowel-marking essential



6. A full, trowel-swept finish



## FRENCH TROWEL



THE finish coat for French Trowel requires a full, free stroke of the trowel in one general but varied direction (Fig. 1, 2 and 3). A full trowel of mortar is used and the stroke carried through until the mortar runs out to a feather edge (Fig. 4). Trowel marks should not be hidden; on the contrary these are emphasized for the display of the texture. Each succeeding band of mortar as applied laps the edge of the finish coat already placed by perhaps half a trowel length (Fig. 5) creating an irregular series of ridged edges or markings with alternate valleys or depressions. An occasional deliberate cross stroke (Fig. 5) artistically breaks any monotony of direction.

Once a stroke is made there should be no return for smoothing, as this texture relies upon a clear picture of the method of application for its beauty and unusual character and any "retouching" strokes make the effect commonplace and ineffective. The upward right direction illustrated in Fig. 6 is most commonly used as the most natural stroke for covering a surface.

The surface may be rubbed with a sack or brush or left as finished with the trowel. Rubbing of the surface tends to soften the lines thus producing another pleasing texture.





REDUCED FROM A 36 BY 42 INCH AREA OF WALL

### MOORISH

This represents an extreme both as to color and texture, being an example of what can be done by irregular spotting. It corresponds to the use of ornament by the Moors, with a lighter tone of a primary color as shading.





Residence of G. H. McCanles, Kansas City, Missouri

Edgar C. Faris, *Architect*

**T**HE dominant features of Moorish planning and construction are the dome, the horse-shoe type of arch and the love of bright color in their surface decoration. In the latter, the ornament has been used in a mere joy of spotting without any pretense at constructive meaning. The arch motif is elaborated constantly, even in decorative lattice work, which makes use of half and quarter arches in a variety of detail. The dome is as characteristically Moorish as any detail in any style, even the modern domestic examples of a Moorish expression invariably utilizing this feature in the covering of the entrance loggia or the solarium. The exterior surfaces conform in general with those of the Spanish with the addition of polychrome tiles, rich fabrics and ornamental details molded in relief.



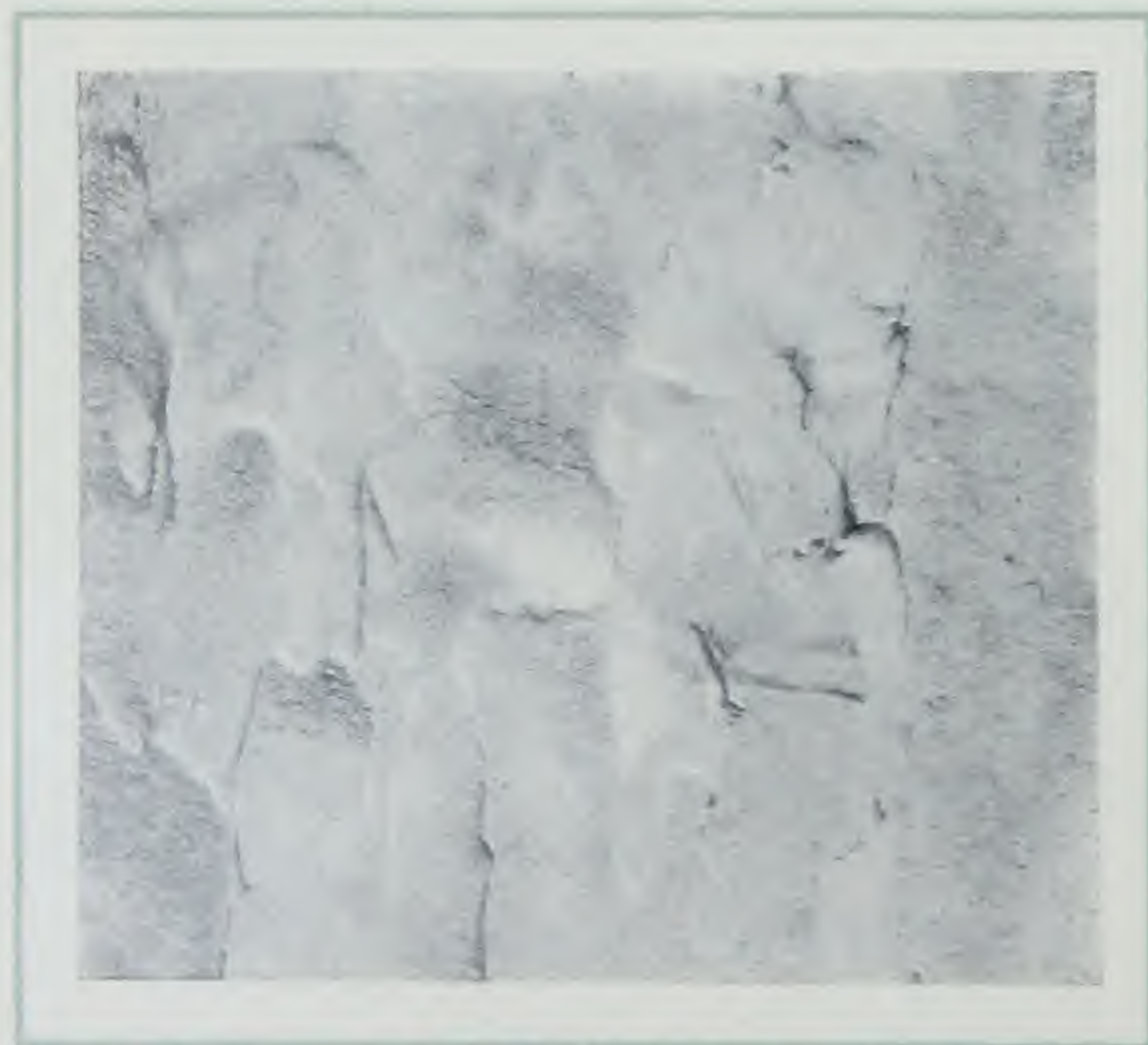
# P O R T L A N D   C E M E N T   S T U C C O



1. Placing finish coat



2. A general vertical stroke



3. Preliminary appearance



4. Tooling with round-pointed trowel



5. No definite design or lines



6. A tooled surface



## MOORISH

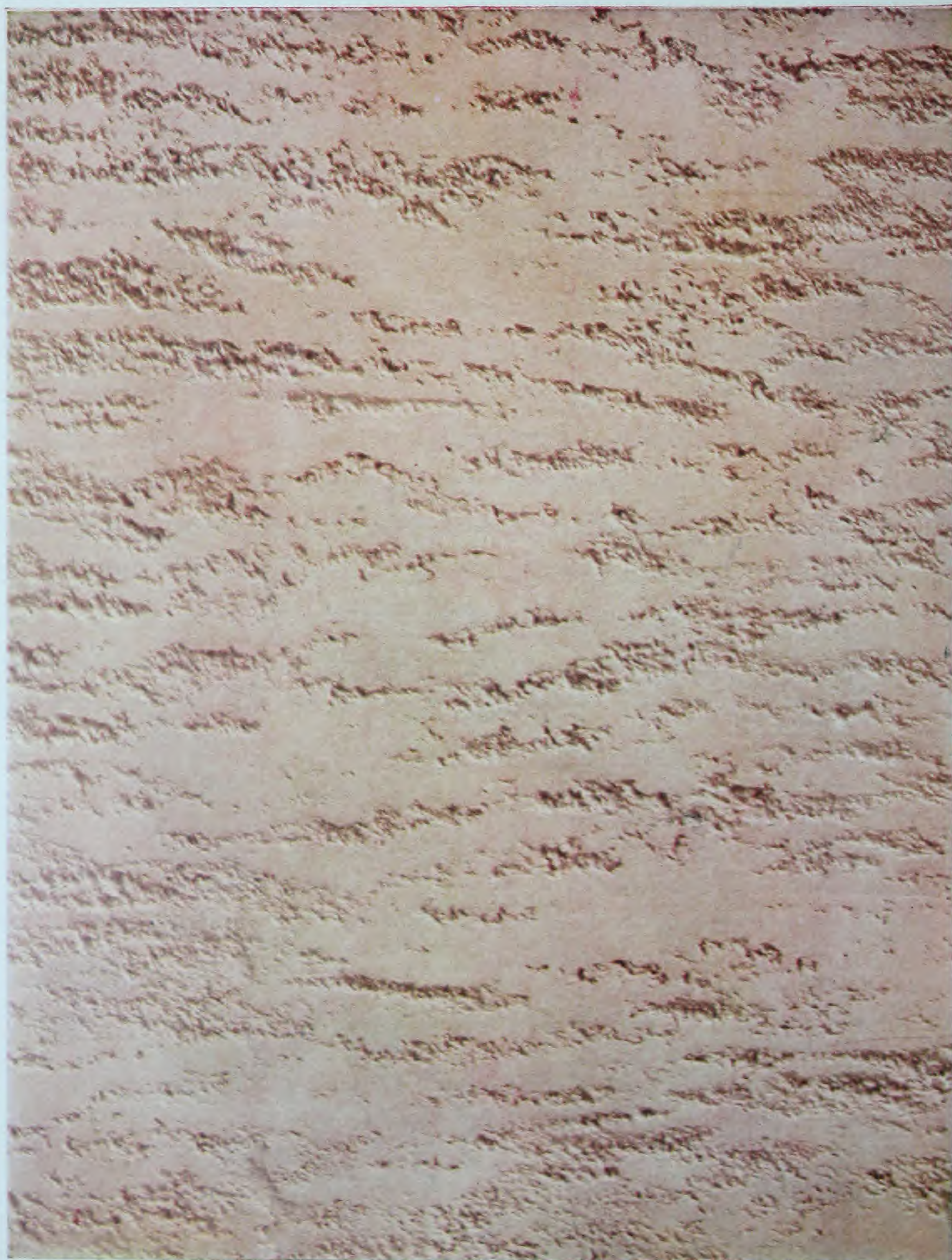


THE finish coat in this texture is built up in the ordinary manner (Fig. 1) using a trowel with rounded corners for applying the mortar. Some variation is made by running the strokes of the trowel in different directions and in curves without making much attempt to smooth the coat as laid (Fig. 2).

Several methods of finishing this texture may be followed, one of which is shown here. This consists of manipulation of the round-pointed trowel in finishing the surface to create an effect like that which the stone mason produces in chipping or "pitching" a stone surface with his hammer and chisel. This leaves a surface as shown (Fig. 3) without trowel marks but with slight ridges and hollows alternating with smoother spots throughout.

The texture will be found to be particularly attractive when sunlight strikes it at an angle, throwing shadows in the deeper spots and lights on the hills of the texture (Fig. 6).





REDUCED FROM A 36 BY 42 INCH AREA OF WALL

### ITALIAN TRAVERTINE

One of the many variations in a representation of travertine stone as infinite in number as the variety of Nature's finishes in this beautiful marble.





Residence of Eugene Munger, Birmingham, Alabama

Warren, Knight and Davis, *Architects*

**T**HIS texture is a representation in portland cement stucco of the appearance of travertine stone. As quarried and cut for use in buildings the source of the irregularly veined markings in this stone is clearly indicated. These alternate layers of smooth, dense surfaces and fine, threadlike lines have been formed through the centuries by innumerable deposits of hard lime strata interlined with fine cavities. Thousands of years of metamorphism were required to produce these effects.

While Italian in type, the texture may be found to harmonize with various architectural expressions and many color effects may be used fittingly with this interesting finish.



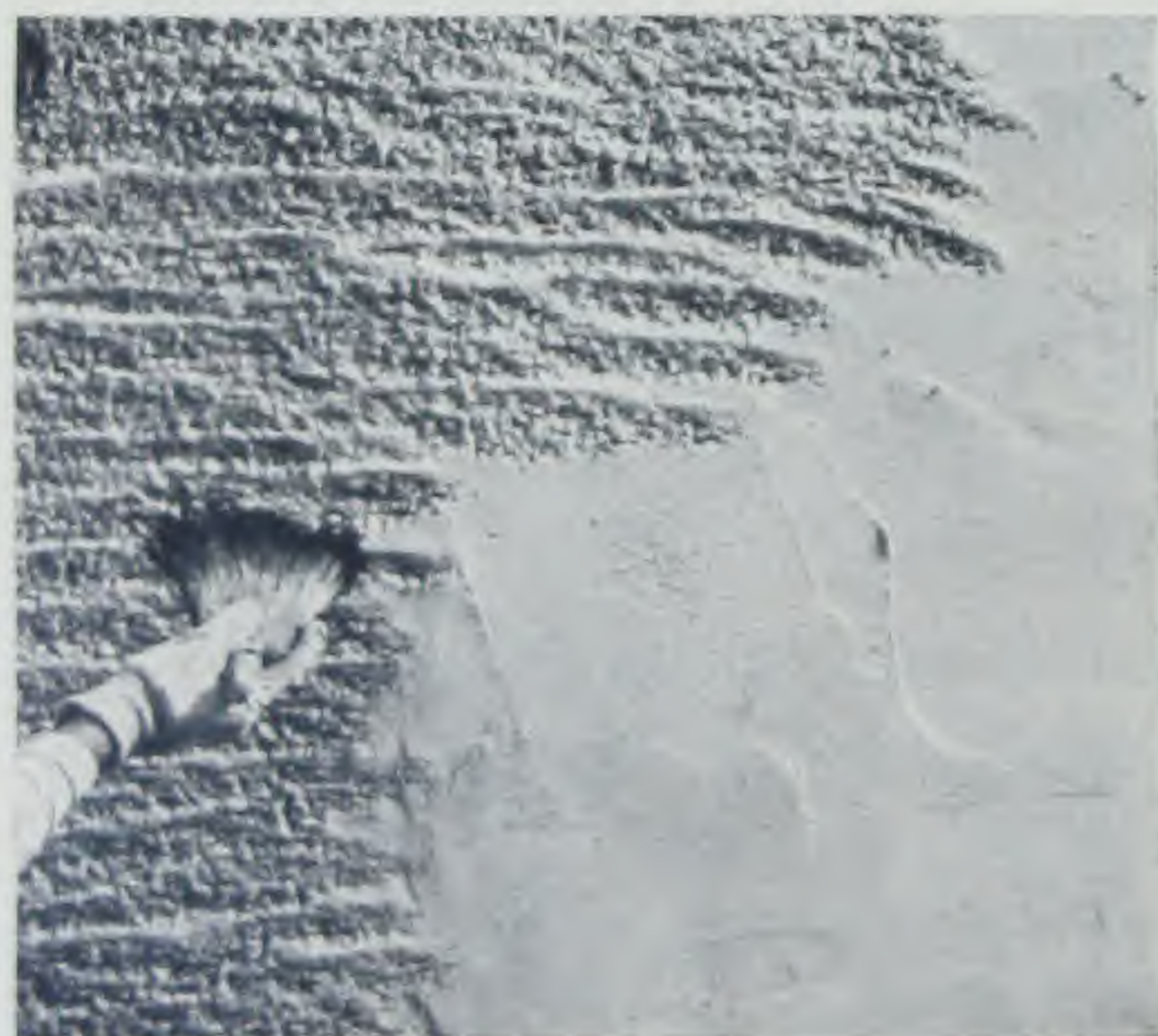
# P O R T L A N D   C E M E N T   S T U C C O



1. Heavy, strong application



2. Irregular stippling



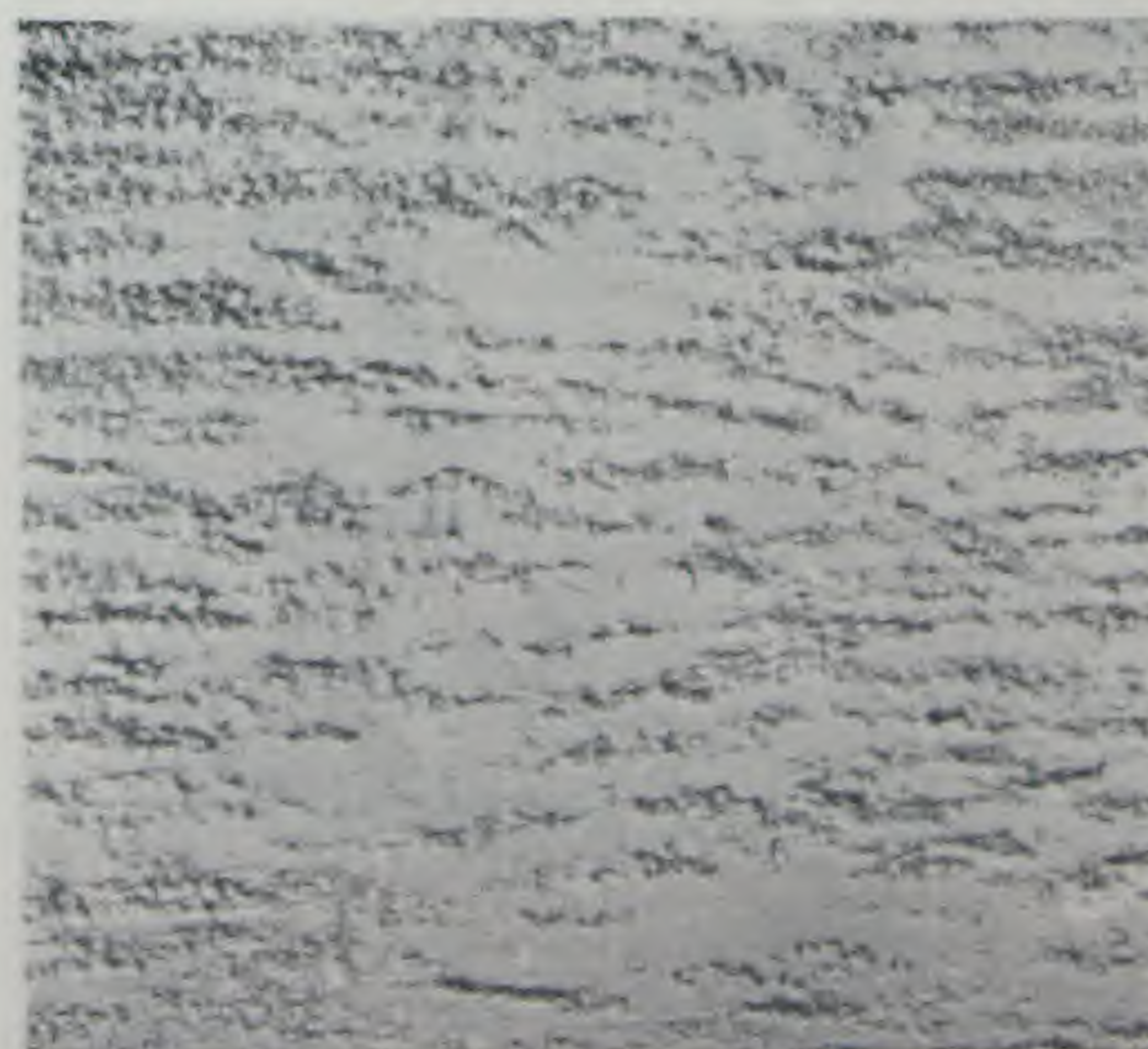
3. Brush held at an angle



4. Stippled appearance



5. Troweling horizontally



6. A stippled, troweled finish



## ITALIAN TRAVERTINE



TO CREATE this texture successfully it is necessary that the finish coat of mortar have good plasticity, so the second coat should be well sprinkled just before the finish coat is applied to kill part of the suction. The finish coat then is applied about  $\frac{3}{8}$ -inch thick and troweled fairly smooth (Fig. 1). Then, using an ordinary whiskbroom, the fresh surface is stippled deeply (Fig. 2 and 3) pulling up an irregular texture on the surface of the mortar. This stippling should not be too regular in appearance, as the spacing and arrangement of the broom marks are to show the irregular markings of the Italian Travertine, which is without regular lines or design (Fig. 4). In stippling, the whiskbroom should be held at an angle (Fig. 2) to the surface of the wall to produce the hillocks and hollows which, when troweled, form the veined markings of this texture.

Using the trowel flat against the wall, smooth down with fairly strong pressure the higher portions of the coat to a plain surface (Fig. 5). No trowel marks should be left on the finished surface. The lower depressions made by stippling, however, remain in the finish and in combination with the troweled areas create a very real effect of Travertine stone.



# PORTLAND CEMENT STUCCO

## CONDENSED SPECIFICATIONS

### GENERAL

#### Preparation of Surface

1. All hangers, fasteners, trim or other fixed supports or projections of any kind shall be in place previous to the application of stucco. In masonry backing the surface shall be cleaned thoroughly before stucco is applied and shall be sufficiently rough to provide a good mechanical bond for the first coat. (See Recommendations.)

#### Flashing

2. Flashing shall be in place previous to the application of stucco in the following locations: at the top and along sides of all openings wherever projecting trim occurs; across the wall and under coping, cornices or brick sills with mortar joints, flashing to project beyond upper edge of stucco; under built-in gutters and around roof openings; at the intersection of walls and roofs; and at all other points where flashing would prevent water from getting behind the stucco. (See Recommendations.)

#### Water Protection

3. All horizontal exposed surfaces, which are of stucco, such as copings, cornices, belt courses, shall be given sufficient fall to prevent water from accumulating on such surfaces. In general, the construction shall protect the surface against excessive concentrated water flow, all horizontal projections being provided with overhanging drips and watertight joints. Stucco wall surfaces shall be stopped 6 inches above grade line. (See Recommendations.)

### MATERIALS

#### Cement

4. Portland cement shall conform to the current standard specifications of the American Society for Testing Materials.

#### Fine Aggregate

5. Fine aggregate shall consist of clean sand, screenings from crushed stone or pebbles, graded from fine to coarse, passing when dry a No. 4 screen, with not more than 20 per cent through a No. 50 screen, free from dust or other deleterious materials.

#### Water

6. Water shall be clean, free from oil, acid, strong alkali or vegetable matter.

#### Coloring Materials

7. Only permanent mineral oxides that are fully guaranteed by the manufacturer to be unaffected by lime, cement or weathering shall be used in coloring. (See Recommendations.)

#### Hydrated Lime

8. Hydrated lime shall meet the requirements of the standard specifications of the American Society for Testing Materials and when used shall not exceed one-fifth the volume of the cement.

#### Reinforcement

9. Reinforcement shall consist either of expanded metal cut from sheets not less than 20 gauge in thickness with openings not less than  $\frac{3}{4}$  by 2 inches nor greater than  $1\frac{1}{2}$  by 4 inches in size, the fabric to weigh not less than 1.8 pounds per square yard, or wire fabric composed of wires not smaller than 18 gauge used with openings not less than  $\frac{3}{4}$  inches square or with wires not smaller than 14 gauge used with openings not greater than 2 inches square. (For use of metal lath as reinforcement see Recommendations.)

### CONSTRUCTION

#### Proportions

10. Mortar for both scratch and brown coats shall be mixed in the proportions of five (5) sacks of portland cement, one (1) fifty-pound sack of hydrated lime and 16 cubic feet of sand. The finish coat, if not a prepared portland cement stucco, shall be of like proportions to those used in the previous coats, with such additions of mineral coloring pigments as necessary, but in quantities not to exceed six per cent of the volume of the cement used. (See Recommendations.)

#### Mixing

11. Dry mixing of ingredients shall be carried on until the color is uniform; wet mixing until the consistency is uniform. It is positively essential that a definite system be used which shall produce uniform mixes for scratch and brown coats. The quantity of water shall be determined by trial and thereafter used in the proper proportions. (See Recommendations.)

#### Framing

12. Spacing of studs shall not exceed 16 inches. Studding shall run from foundation to rafters without intervening horizontal members, tied together below 2nd floor joists with 1 by 4-inch boards let into the inner faces of the studs. In open construction without sheathing the spacing of studs shall not exceed 12 inches. The corners of all walls shall be braced diagonally to secure the necessary rigidity of the structure. Bridging of studding with 2 by 4-inch braces shall occur at least once in each story height.



### Sheathing

13. Sheathing boards shall not be less than 6 inches, nor more than 8 inches wide, dressed to a uniform thickness, laid horizontally and fastened securely to each stud. Over the sheathing shall be laid, horizontally, beginning at the bottom, any standard asphalt saturated roofing felt weighing 15 pounds per square, the bottom layer lapping the baseboard and each strip lapping the strip below and all flashing at least 2 inches. (See Recommendations.)

### Application of Reinforcement

14. Reinforcement shall be placed horizontally, fastened with approved furring devices not more than 8 inches apart over the surface. Vertical laps shall occur at supports, horizontal joints being lapped and tightly laced with 18 gauge annealed wire. The sheets shall be returned around corners at least 4 inches in sheathed construction and 16 inches in open construction. Corner beads shall not be used. (See Recommendations.)

### Furring

15. All reinforcement shall be furred out from the studs, sheathing or base  $\frac{3}{8}$  inch by any device which will not reduce the effective section of the scratch coat. (See Recommendations.)

### Half Timbering

16. Embedded trim or half-timbering shall be securely nailed directly upon sheathing or studs, and shall have the inside corners of vertical members grooved into which the mortar of the first coat shall be forced forming a watertight joint. All joints on horizontal members shall be flashed.

### Masonry Walls

17. Concrete, concrete block, brick, hollow tile and similar walls shall be rigid and constructed upon solid footings, all units being set in portland cement mortar. The surface on which stucco is to be applied shall be clean, free from all dust, dirt or loose particles, preferably rough and of coarse texture. Wood lintels over wall openings shall not be used. Monolithic concrete walls shall be roughened by hacking, wire brushing or other effective means. Concrete block, tile or brick units shall have the joints cut back even with the surface. Clay tile shall be hard burned with dovetail or heavy, ragged scoring. Clay brick walls shall be composed of rough, hard burned clay brick, and if painted or waterproofed shall be covered with reinforcing fabric before overcoating with stucco. (See Recommendations.)

### Wetting the Surface

18. Immediately preceding the application of the stucco, the surface of the wall shall be evenly wetted but not saturated. Water shall not be rapidly absorbed from the plaster, nor remain standing on the surface.

### Retempering

19. Retempering by the addition of water shall not be permitted.

### Consistency

20. Only sufficient water to produce a workable consistency shall be used.

### Application of Stucco Coats on Frame Construction

21. The application shall be carried on continuously in one general direction without allowing the stucco to dry at the edges. If it is impossible to work the full width of the wall at one time the joining shall be at some natural division of the surface, such as a window or door. The scratch coat shall be shoved thoroughly through the metal reinforcement forming a solid mass against the sheathing paper, thus completely encasing the metal. This coat shall be  $\frac{1}{2}$  inch thick fully covering the face of the reinforcement and shall have its surface heavily cross scratched to provide a strong mechanical key or bond. Allow this coat to become thoroughly dry. It shall be wet down but not saturated before applying the second coat. The second, or browning coat shall be at least  $\frac{1}{2}$  inch thick over the face of the first coat and shall be rodded straight and true in every direction, or left untrue giving a wavy effect, as the desired finish would suggest. If the finish is to be a float type finish, the second coat shall be brought to a good even surface with wood floats. This coat shall be wet down for at least three days and allowed to become thoroughly dry before the finishing coat is applied. The finish coat shall be applied not less than one week after the application of the second coat and shall vary in thickness from  $\frac{1}{8}$  to  $\frac{1}{4}$  inch, depending upon the texture of the finish coat. (See Recommendations.)

### Scratch Coat on Masonry Walls

22. Mortar shall be troweled on to a thickness of approximately  $\frac{1}{2}$  inch, heavily cross scratched and allowed to become thoroughly dry before the browning coat is applied. (From this point on use specification covering "Application of Stucco Coats on Frame Construction." See paragraph 21.)

### Freezing

23. Stucco shall not be applied when the temperature is below 32 degrees F., unless protected with canvas and heat sufficient to prevent freezing for a period of at least 48 hours after application.

### Curing

24. Each coat shall be protected from drying rapidly from effects of intense sunlight or wind until it has sufficiently hardened to permit sprinkling. Each coat shall be kept moist by sprinkling for at least three days following its application.



### Back-Plastered Construction

25. In back-plastered construction, the metal lath shall be attached directly to the face of the studs by an approved furring device and the mortar of the first, or scratch coat applied with sufficient force to push it through the openings of the metal lath forming keys behind. The back-plastering coat shall not be applied until the scratch coat has hardened sufficiently to prevent injuring the keys of the scratch coat. The back-plastered coat shall not be less than  $\frac{1}{2}$  inch thick back of reinforcement, composed of the same proportions and materials as the scratch coat and shall be applied from side to side of the hollow space between studs. The application of the browning and finish coats on back-plastered construction is identical with other methods as previously given. (See Recommendations.)

### Open Construction

26. In open construction a standard 15-pound asphalt saturated roofing felt shall be applied directly on the outside face of the studs being fastened by flat-headed roofing nails on 12-inch centers. Vertical laps shall be 12 inches and horizontal laps 6 inches over

the lower course. Metal reinforcement shall be applied over the entire surface held in place by approved furring devices, lapping at least 2 inches on all horizontal laps and at least 6 inches on all vertical laps. All horizontal laps between the studding shall have at least one tie with No. 18 annealed wire. All vertical laps shall occur on studding and shall be laced with No. 18 annealed wire. All metal reinforcement shall be returned around corners at least 16 inches. Corner beads will not be permitted.

### Finish Coat

27. The finish coat shall be of the color and texture agreed upon by the owner and architect. If prepared portland cement stucco is used it shall be applied according to the manufacturer's specifications. If a field mix is used for the finish coat it shall be applied in accordance with the practice outlined here. In all cases the architect will furnish samples of texture and color which shall be inspected by all bidding contractors. A definite decision shall be arrived at as to color and texture before bids are taken, in order that bidding shall be done intelligently. (See Recommendations.)

## RECOMMENDATIONS ON DESIGN AND CONSTRUCTION

### Preparation of Backing Surfaces

Successful work depends in large measure upon suitable design of the structure. If the base moves, the additional stress placed in the stucco slab may cause it to crack, even though good construction is used in the slab itself. Without secure and positive anchorage, the stucco slab should not be expected to stand alone. Masonry walls should provide clean, rough surfaces and when evenly wetted but not saturated should also give the proper amount of "suction" to the first coat, which depends for its bond on these conditions being fulfilled. Unequal suction in the first coat because of different degrees of suction possessed by different backing surfaces will tend to follow through successive coats and may change the color in the finish coat.

Chimneys to be stuccoed should have reinforcing fabric properly placed and supported over the surface, and caps with drips extending beyond face of stucco, giving free fall to water shedding.

### Shedding of Water Flow

"Keep water from getting behind the stucco" is a fundamental rule. The design should go further than this providing a means for preventing any accumulation of water flow from reaching the stucco surface at all. It is absolutely necessary to see that all molds, caps and sills are provided with drips. The tops of all moldings and other ornamentation should be so made

as to run the water off quickly. It is not necessary to have this fall interfere with the architectural design, but it should be positive.

### Flashing

Flashing should be specified whenever there is any doubt as to the waterproofness of a joint. The use of such materials that will not oxidize and stain the stucco, is recommended.

### Insulation

Insulation requirements may be met by the application of any satisfactory insulation material, or ordinary building paper in a double layer between the studs.

### Sheathing

Diagonal sheathing tends to crack the overlying stucco by setting up strains in the supporting frame, and is also less economical in labor and material than horizontal sheathing.

### Furring

The aim in using furring should be to locate and securely fasten the sheet of reinforcement as near the center of the stucco slab as possible without using a type of furring which by its nature would materially decrease the thickness of the slab and cause its cracking. It is suggested that a metal furring nail with metal spacer will answer these requirements satisfactorily.



## Reinforcement

The principle to be followed is to create a continuous metal reinforcement over the entire surface to be stuccoed and have this of a character similar to the reinforcing system of reinforced concrete. To meet such a requirement demands that the sheet of metal reinforcement have large enough openings through which the mortar is to be pushed that there will be no difficulty in completely filling the space back of this sheet and completely embedding same.

Metal lath if used as a reinforcement (without back-plastering) should have as large mesh openings as possible, be furred out  $\frac{3}{8}$  inch from sheathing and weigh not less than 3.4 pounds per square yard. Special care must be used to completely encase the lath by pushing the mortar through it thus filling the space back of the lath. Unless this is done the intent and purpose of having the lath act strictly as a reinforcement is defeated.

## Mixing

The use of a machine mixer is advocated for uniformity of mixing if the work is of sufficient size to warrant its use. Ordinarily a mortar box will suffice. Using a one cubic foot measuring box, measure out 16 cubic feet of sand and mark its level in the mortar box. Fill the mortar box to this mark with sand in succeeding mixes, five sacks of portland cement and one sack of hydrated lime being added.

## Proportions

Richer mixtures in the finish coat mortar may be used with the finer finishes, while with coarser textures the standard 1 to 3 proportions of cement to sand should be adhered to.

## Application of Stucco Coats

When stuccoing masonry walls the bond between first coat and base surface should be as strong as possible. A correct suction between coats tends to draw the fine particles of cement of the new coat into the pores and interstices of the old, and thus creates a strong bond. The first, or scratch coat, is the most important in giving strength to the slab, the second or brown coat to even out or to produce an undulating surface and the finish to create the texture wished. Two-coat work may be used on a monolithic masonry base, or on a concrete block base, but never should be used on frame with metal reinforcement.

As time is always a factor in any building operation, it is advisable to let the first plastering operation be the application of the sheathing paper, the metal reinforcement and the scratch coat. Then the interior work can be done before the browning coat is applied. This should be allowed to dry thoroughly and all

outside cement work completed before the finish coat is applied. This eliminates the marring of the finish coat and leaves the building clean, also eliminating any loss of time for curing which is so necessary to stucco work.

## Back-Plastered Construction

In back-plastering, care should be taken that complete embedment of the reinforcement is accomplished without injury to the first plaster coat already in place. With a total depth of  $1\frac{1}{4}$  inches in a back-plastered stucco slab there is no necessity for insulation. The fire protective qualities of back-plastered construction are quite sufficient, especially if metal lath baskets, filled with noncombustible materials, are placed between studs at each floor level, as fire stops.

## Hair or Fibre

Hair or fibre should be used only in the first coat of mortar in back-plastered metal lath construction.

## Finishing

The architect should bring to his client's attention the possibilities in portland cement stucco colors and textures as described in this book. In the choice of these, samples may be submitted by competent stucco contractors and in every case a definite sample of texture and color should be furnished by the architect for the basis of bids.

The application of the finish is a distinct craft and the plastering contractor should endeavor to use only experienced workmen to obtain good results. Many variations of color and texture are possible and will produce artistic finishes if the practice suggested here is followed.

Materials Required for 100 Square Feet of Surface for Various Thicknesses of Stucco

THICKNESS	PROPORTIONS			
	1 : 3		1 : 3½	
	Cement (Sacks)	Sand (Cubic Feet)	Cement (Sacks)	Sand (Cubic Feet)
1/8 inch	.36	1.10	.33	1.15
1/4 inch	.73	2.20	.65	2.29
3/8 inch	1.10	3.30	.98	3.44
1/2 inch	1.47	4.40	1.31	4.59
3/4 inch	2.22	6.60	1.91	6.87
1 inch	2.94	8.80	2.62	9.18
1 1/4 inches	3.68	11.00	3.28	11.45

These quantities may vary 10 per cent in either direction due to the character of the sand and its moisture content. No allowance is made for waste.

If hydrated lime is used (20 per cent by volume of cement) decrease these quantities 12 per cent.



## PREPARED PORTLAND CEMENT STUCCO

While the principles underlying the preparation, proportioning, mixing and application of portland cement stucco are very simple and can be easily understood by the average plasterer, a more uniformly good quality of stucco would undoubtedly result if the materials came on the job either completely mixed ready for the addition of water, or if they were available to the plasterer in properly proportioned packages. Furthermore, finishes involving definite and controlled color effects could be more easily popularized and developed if the materials were prepared in a plant under expert supervision. This would give the advantage of factory measured and proportioned materials, machine mixing, grinding of the coloring pigment with the cement and selected materials.

Some shades of stucco require the use of as many as four different pigments which could only be combined with difficulty on the job. By automatic measuring and weighing, every batch of stucco of any one color can be made exactly like every other batch, thus assuring the uniformity desired in good practice. The right amount of sand could be added as well, so that when the stucco is delivered at the job it is only necessary to add water and use.

These advantages accruing from the use of prepared stucco are shared by the builder, architect and owner. The use of coloring pigment requires expert knowledge of the amount necessary, or experimenting, to obtain any desired shade or hue. Knowledge is also required as to the properties of the various pigments that make them suitable for specific uses. Continual experiment and research work on the part of several reputable manufacturers of colored portland cement stucco have shown that only the highest grade of mineral pigments should be mixed with cement if fading is to be avoided. Builders have previously been under the necessity of trusting to the care of the mortar mixer at the job for results. Carelessness on his part or failure on the part of the contractor to buy the proper pigments would result in a faded stucco or one which dried out to several different shades. The experience of the manufacturers has also shown that the best results are obtained by mixing the cement and pigment together for a longer time and more thoroughly than is possible on the job.

Some manufacturers of prepared stuccos have available today mixtures of coloring pigment and cement, in the right proportions, which have been ground together in machines. These are furnished in suitable containers for use on the job and it is only necessary to add water and apply the mixture as stains on the finished texture. Stains applied in this way have the tendency to brush off for the first few days, this natural blending producing wonderful softening effects on the surface. Stains containing oils, glues, shellac or caseins should never be used over stucco, owing to the short life of such coatings and the possible injurious effects to the stucco.



## COLORING MATERIALS

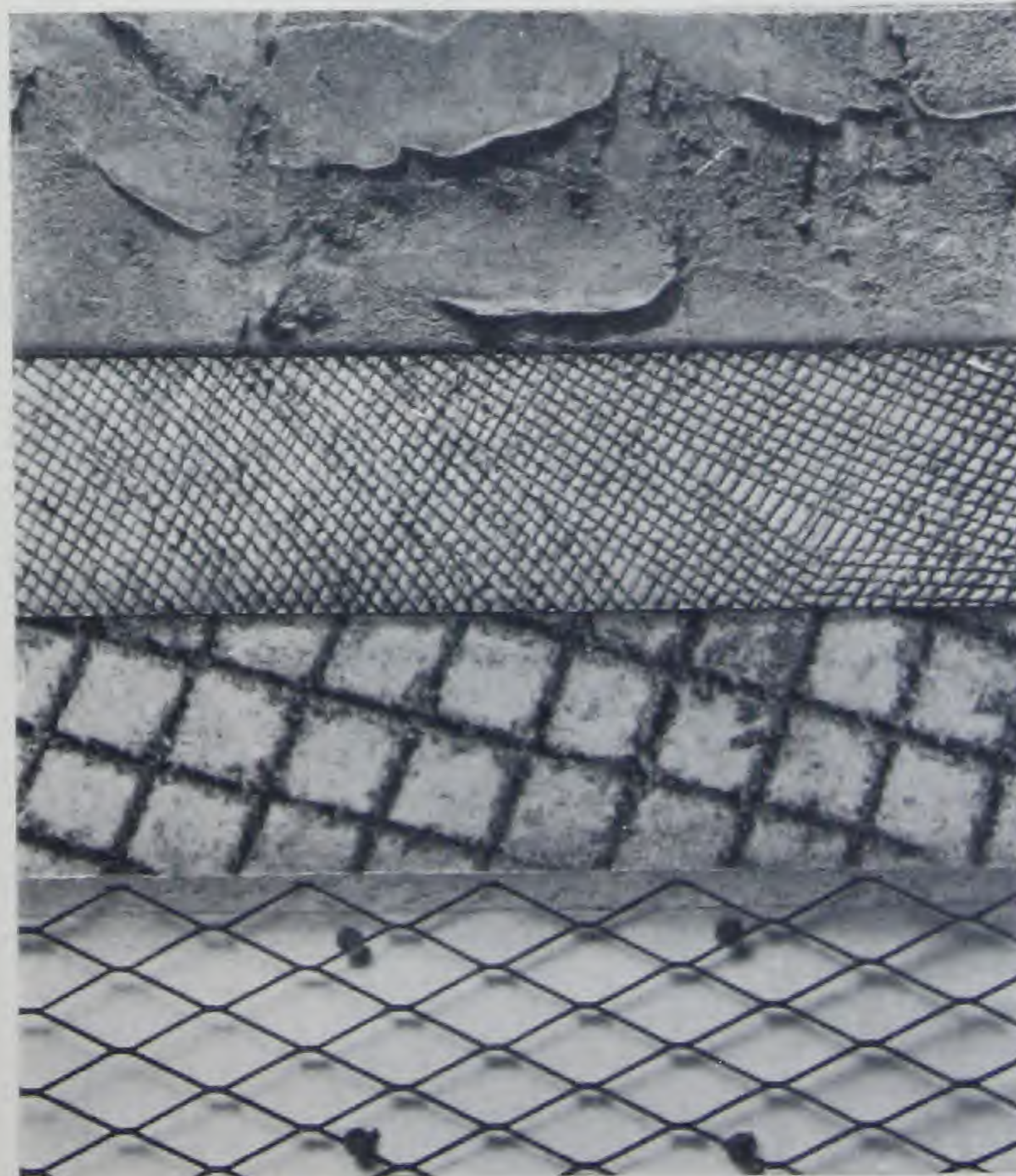
Mixing of mineral coloring pigments with the ingredients of the finish coat should be resorted to on the job only when prepared machine-mixed materials for this coat are not available in the desired colors. Then, if it is desired to add color to the stucco, use should be made of mineral coloring pigments only if it is found that the natural colors of the sand with either grey or white cement do not produce the desired effect. Mineral colors should be used as those of an organic or aniline base are likely to fade under the action of the lime in the mortar or, because of inert, non-strength-giving materials being deposited in the mortar, may excessively reduce the strength of the stucco slab.

The finer the coloring materials are ground and the better they are distributed through the mortar, the higher is their ability to impart their color. Another important requirement in a satisfactory pigment is a high tinting value. Although the unit first cost of such pigments will be higher, it is advisable to use them as the least amount of pigment will be required to obtain a definite tint. Simple tests will readily indicate how well any particular pigment will intimately unite with the cement. These tests may consist of quietly placing a small quantity of the powdered pigment in a glass of water and watching its settlement, or in making a thin wash mixture with neat portland cement, allowing it to stand and then observing if separation of the pigment particles from the cement



PORTLAND CEMENT STUCCO ON CONCRETE BLOCK

Stucco and concrete block bond perfectly, because each is made from the same basic material — portland cement. If the wall has few irregularities, two-coat work may be used.



PORTLAND CEMENT STUCCO ON FRAME CONSTRUCTION

Each coat of stucco should be heavily scored to provide a good bonding surface for the succeeding coat. No coat should be applied until the preceding one has thoroughly cured.



occurs. Additions of most inert admixtures somewhat reduce the strength of the stucco, but not appreciably unless the amounts added are large. In general, it will be found that additions of coloring material not greater than six per cent of the weight of the cement will be sufficient to produce any but the darker tints.

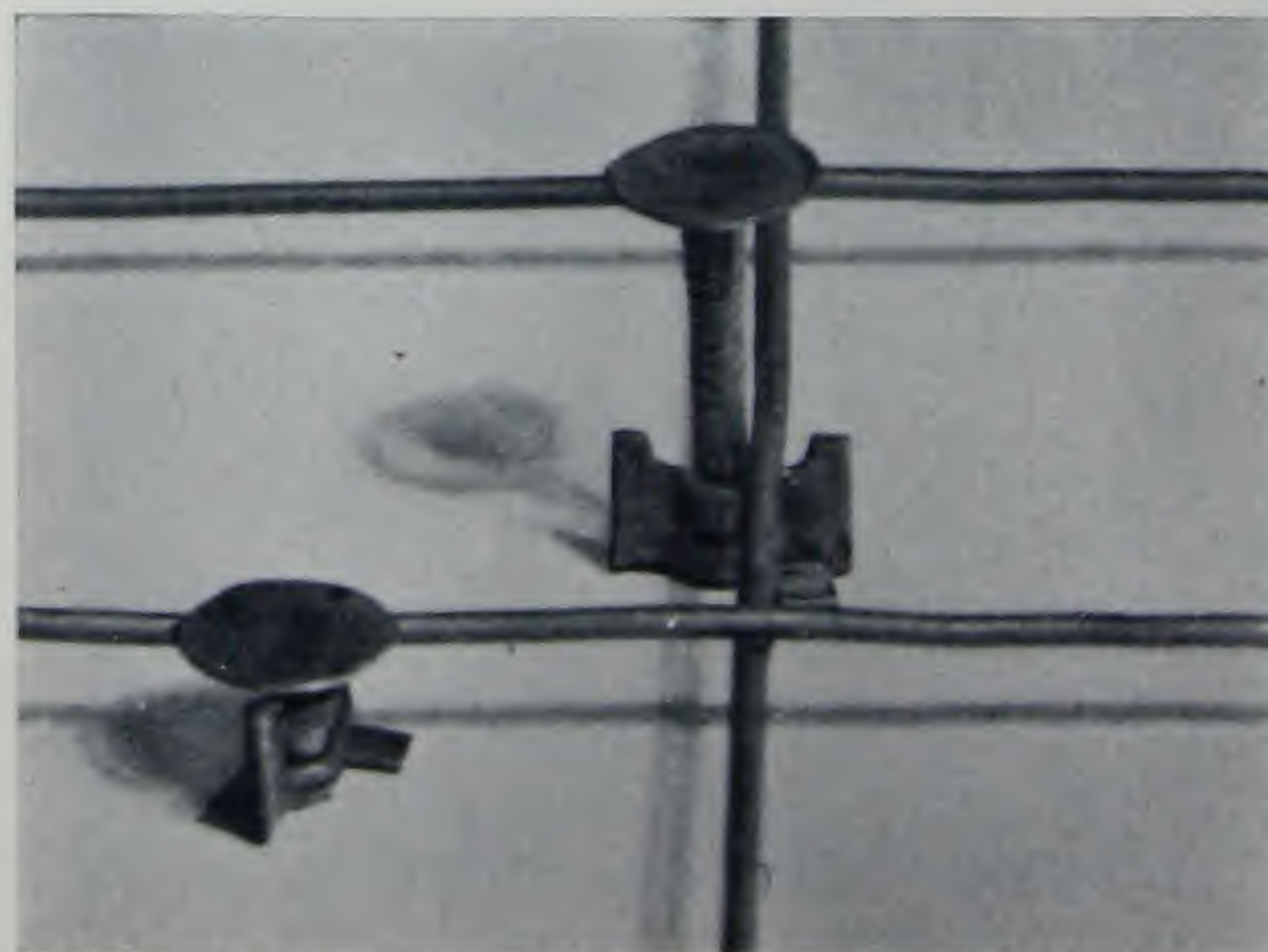
It is practically impossible to arrive at definite color formulae applying to the use of coloring materials since the variations in the colors of the sands used as well as in the pigments themselves would make such formulae but approximations. Best results are obtained by experiment or trial. Small panels should be made, using different percentages of pigment with uniform methods of mixing. For the lighter tints the use of white portland cement in the finish coat is convenient in obtaining the more delicate shades.

Polychrome color effects used with certain textures add pleasing variety. There are several ways of producing these in the finish coat. An amount of each of the colored mortars may be placed separately on the mortar board, and smaller amounts from each pile are laid together on the hawk, the trowel then being used to cut through and apply this vari-colored mortar mixture to the wall. Or the colors may be blended by combining the amounts of colored mortars on the mortar board and proceeding as usual in applying the mixture to the wall with the hawk and trowel. Thin washes, made of mixtures of coloring pigment, cement and water in tried proportions may be brushed on the surface as a stain. Any polychrome surface may be blended by rubbing with a scrub brush or a wadded piece of burlap, which removes most of the stain from the higher points.

A general guide to the selection of coloring materials to obtain various tints in stucco follows: Reds and Pinks — Red Oxide of Iron; Yellows and Buffs — Yellow Oxide of Iron; Greens — Chromium Oxide; Browns — Brown Oxide of Iron; Blues — Ultramarine Blue; Greys or Slate Effects — Manganese Black, Drop Black, or Germantown Lampblack.



This type of furring device fulfills the requirements of proper furring. The metal spacer locks the strand of reinforcement, holding it out from the sheathing.



The furring should securely fasten and locate the reinforcement approximately  $\frac{3}{8}$  inch from the sheathing. It should be of a type which does not materially decrease the effective thickness of the stucco slab.



## OVERCOATING OLD HOUSES WITH PORTLAND CEMENT STUCCO

"Overcoating" is the term generally applied to the method of using portland cement stucco as a covering for the exterior surfaces of old houses. The structural framework of such houses invariably still possesses useful life, usually being built of staunch, seasoned timber. The problem which this rejuvenation process solves is how to preserve and utilize the value of this worthwhile structure, while eliminating the dilapidated appearance of the old exterior and creating a new value of appearance and utility in keeping with more modern ideas and architectural styles. Coincident with the overcoating work, alterations can be made eliminating or changing any undesirable architectural features of the house. When the work is finished, in place of the antiquated structure there is a house of modern appearance, still containing, however, the sound timbers and workmanship of the past. Final settlement of the foundations has also occurred, so that it is reasonable to assume that in the future there will be no further unsightly cracking on walls or ceilings.

The preparation of the surface of the old wall to receive the stucco overcoat requires but a minimum of treatment. In adding an inch or more of stucco to this surface it is of course necessary that all the original projections or trim, such as window and door frames, be extended or built out proportionately to this depth.

The majority of houses which are overcoated are of frame construction with siding boards. After the extension of the trim a layer of a substantial, waterproof building paper should be applied directly on the siding, which should be re-nailed if found loose. The sheet of reinforcement is attached over this paper, being furred out  $\frac{3}{8}$  inches, so that it will be in the approximate center of the stucco slab and to insure its positive and complete embedment in the mortar. Care should be taken to force the scratch coat mortar through the openings of the reinforcement and completely fill up the space back of it. From this point on, the procedure of completing the stucco overcoat follows the standard practice outlined in this book.

When the old surface is of masonry it should be sufficiently rough to give the first coat of mortar a good mechanical bond. If the wall is painted or otherwise glazed, reinforcement should be fastened over it and standard procedure followed.

The advantages of overcoating an old house with portland cement stucco may be summarized as follows: Increased property value is assured by better appearance; upkeep in painting and repairing has been cut to an insignificant item; the house has been thoroughly insulated against temperature changes; for this same reason there is a decided saving in the cost of heating; encased as it is in this "concrete overcoat," the fire-safety of the structure is apparent.



# ADDITIONAL STUCCO TEXTURES



ITALIAN

Random troweling reduces the irregularities of this rough-torn surface



ITALIAN BRUSH

A smoother, more carefully finished example of Italian textures



ENGLISH COTTAGE

A plastic surface coat made irregular with random strokes of a broad, soft-bristle brush



FRENCH

Controlled manipulation of a wood float produces a surface of pleasing irregularity



FRENCH BRUSH

A brush is used to soften the sweeping, semi-circular trowel marks



GOTHIC

A floated finish rough-torn with the back edge of the trowel

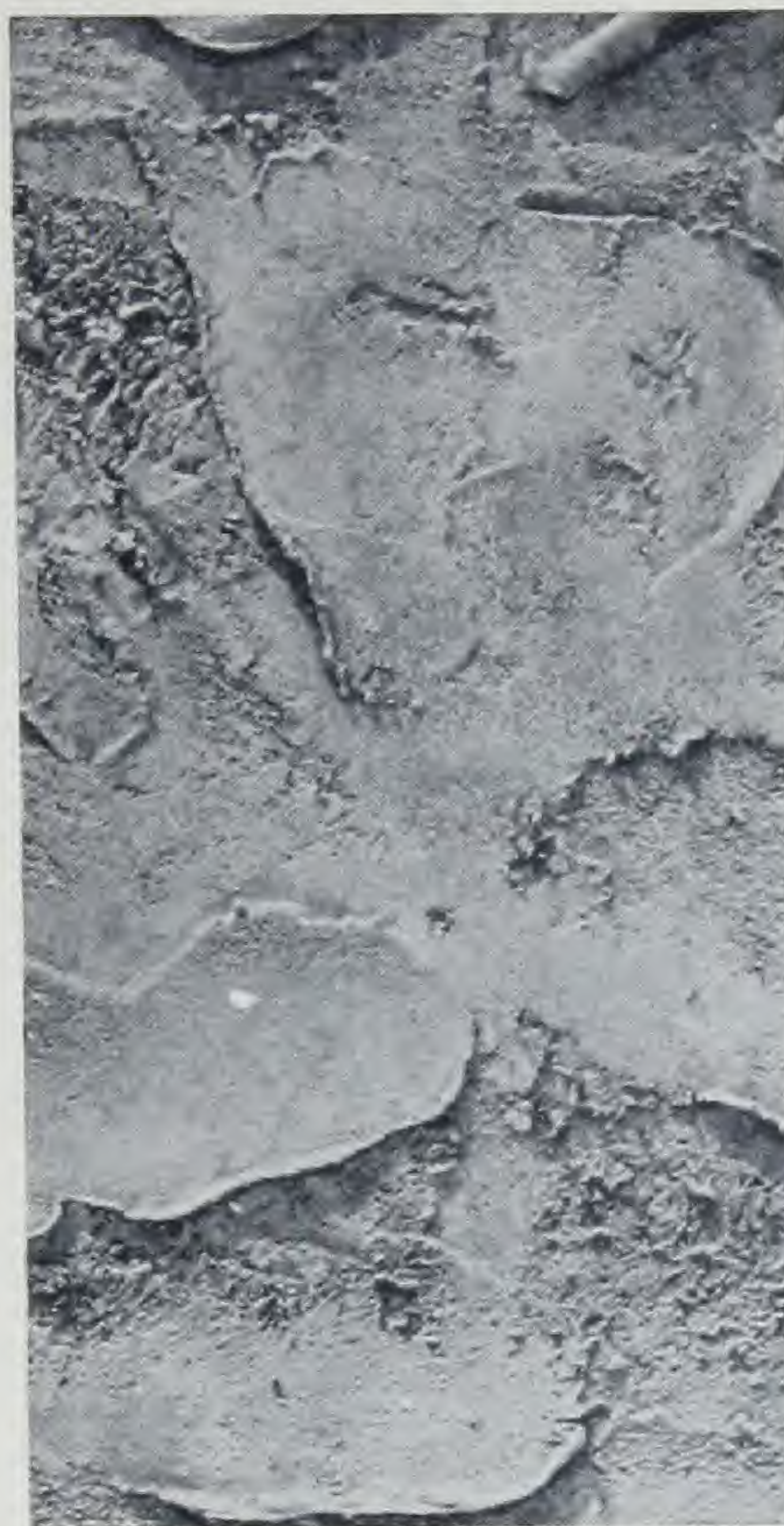


# ADDITIONAL STUCCO TEXTURES



ENGLISH

A surface marked with short, irregular trowel strokes and, while still plastic, lightly rubbed with burlap



ENGLISH

The irregularities are produced by side strokes of the trowel



CALIFORNIAN

A rough cast finish reduced by rubbing with a carpet-covered float



SPANISH

Surface unevenness softened by careful rubbing



MODERN AMERICAN

The edge of the float or trowel is used to roughen a smooth finish slightly



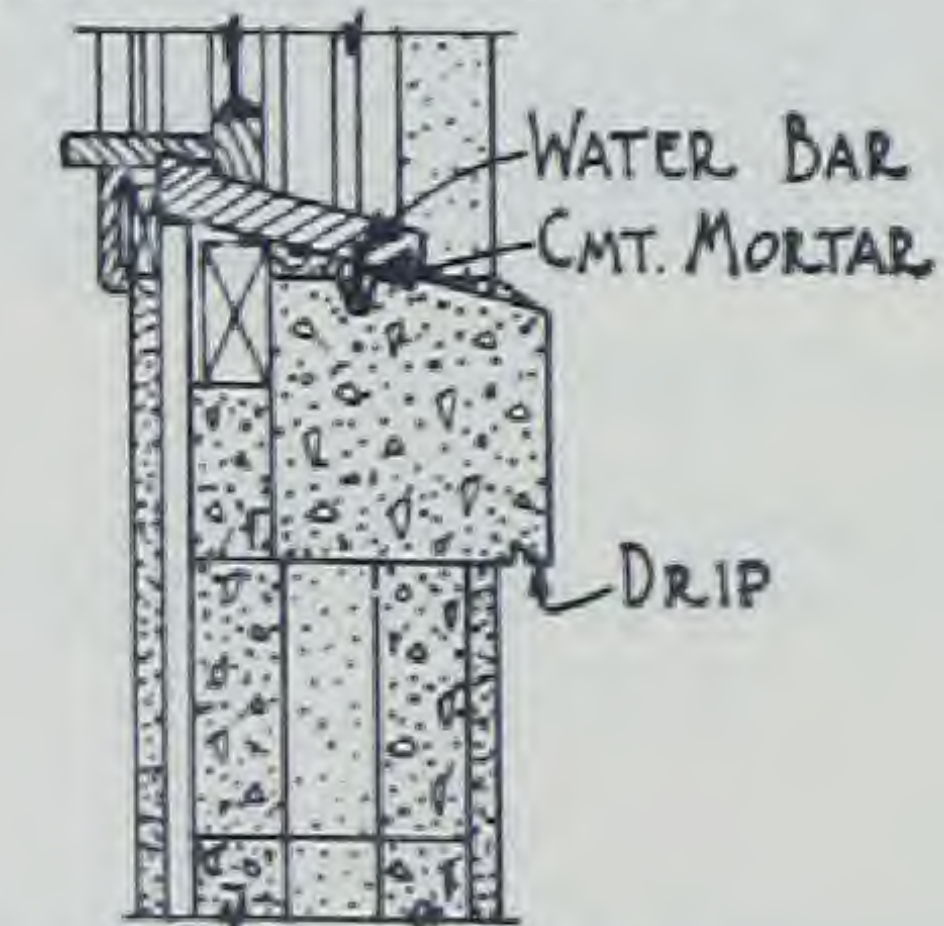
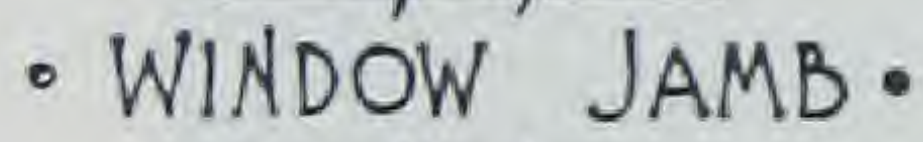
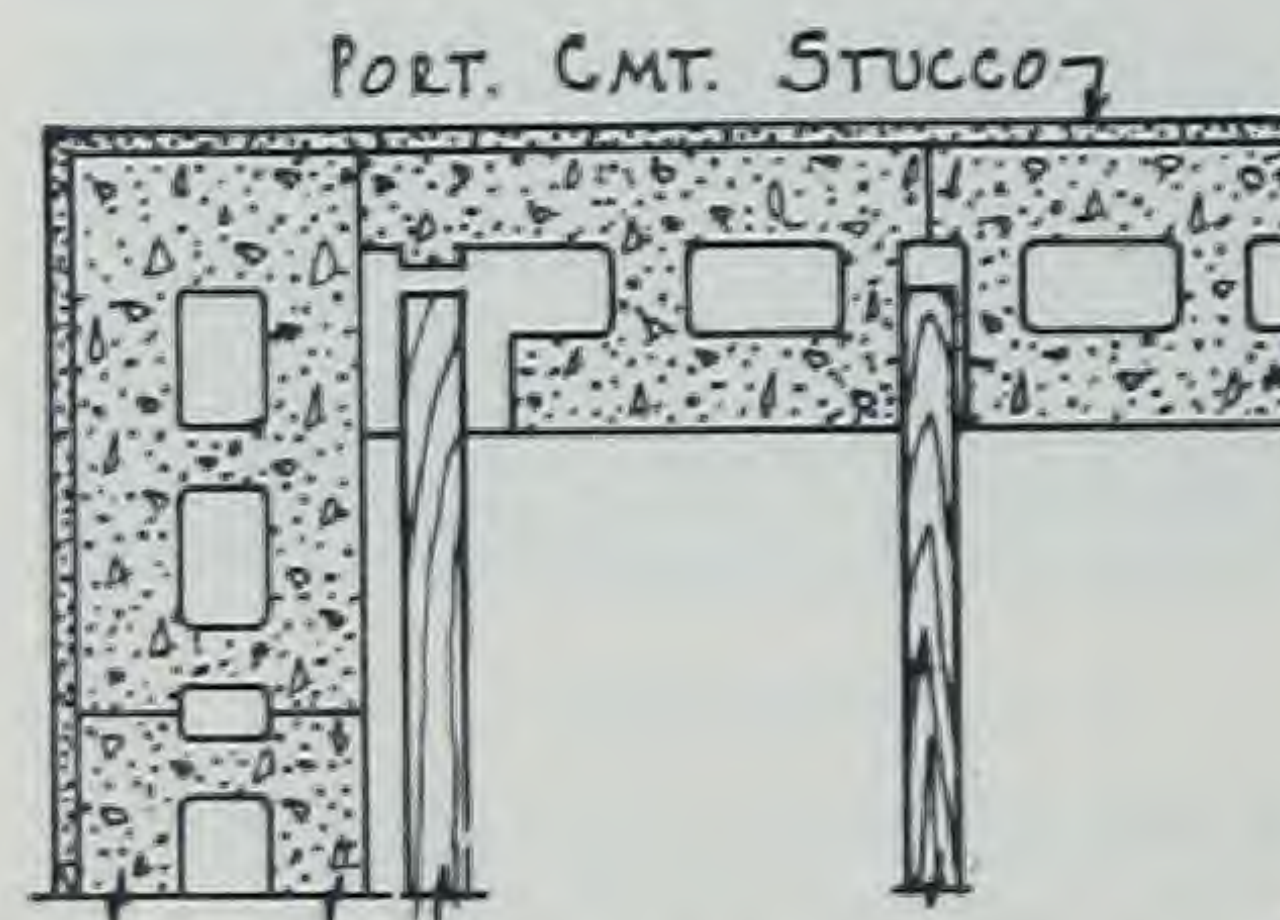
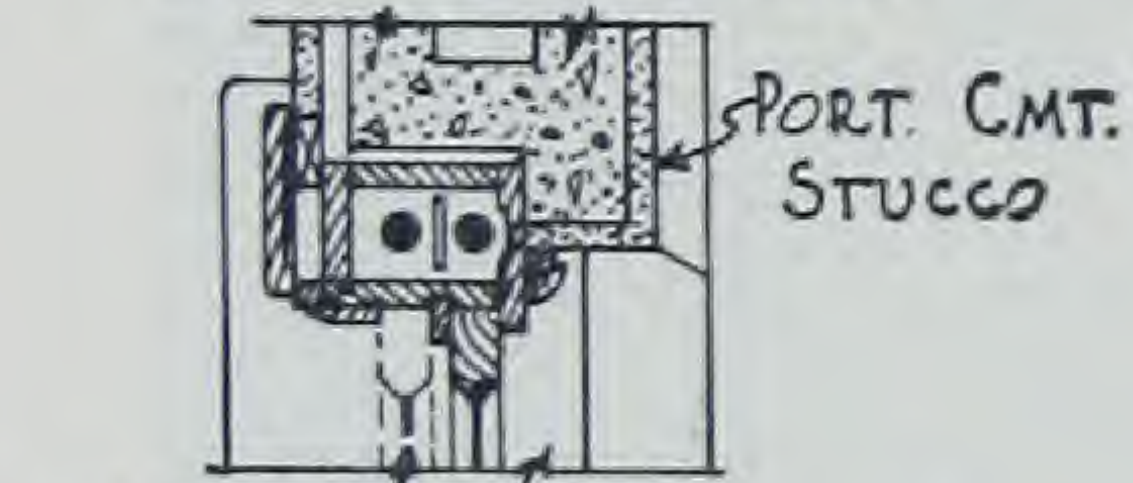
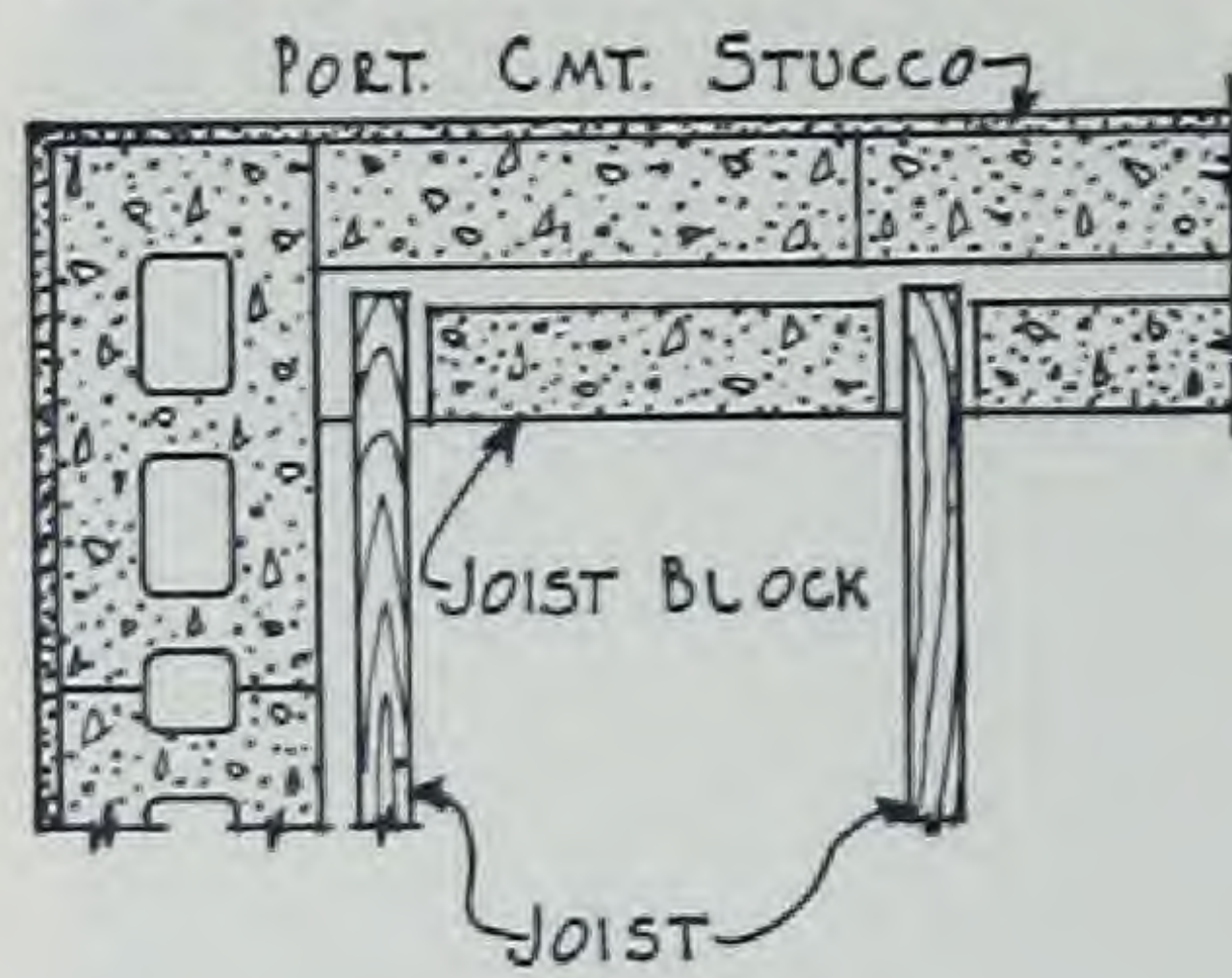
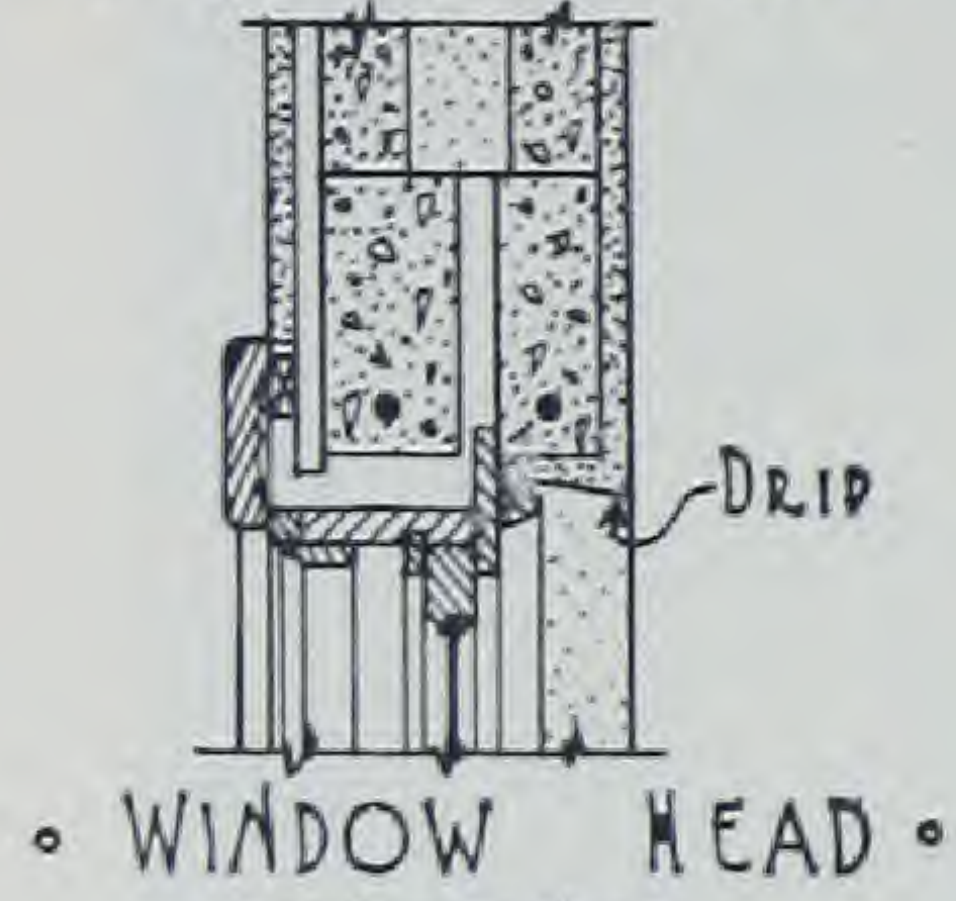
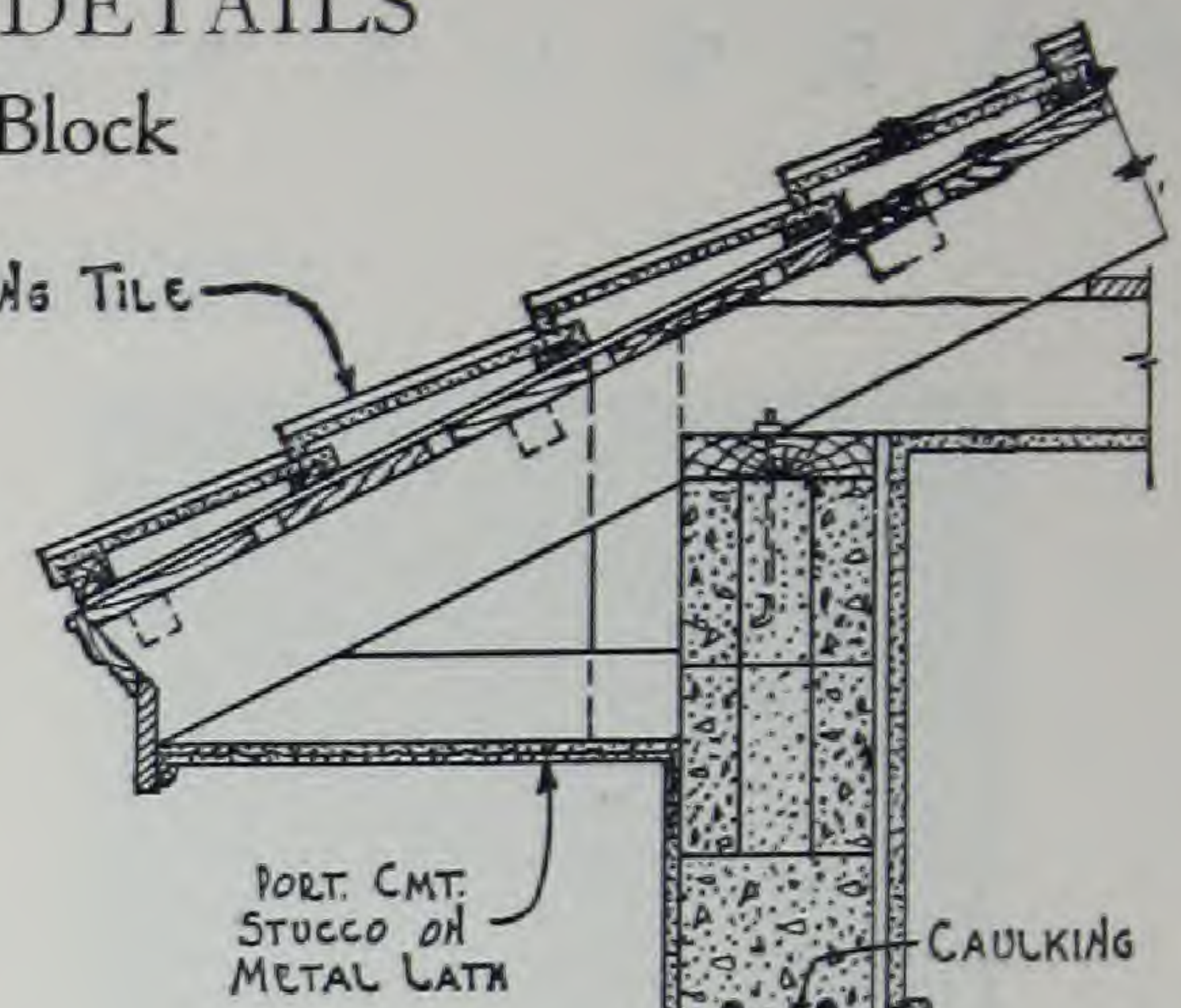
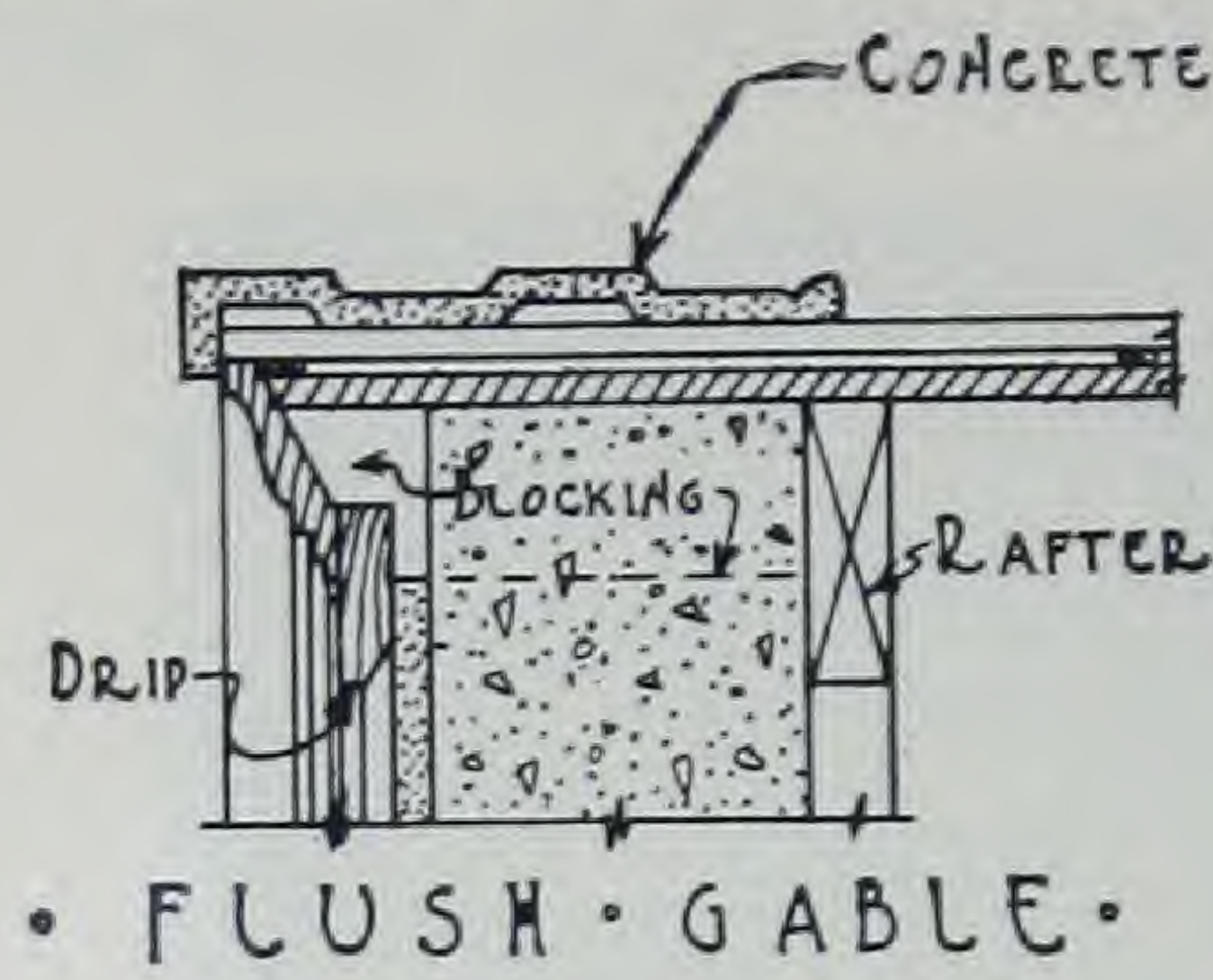
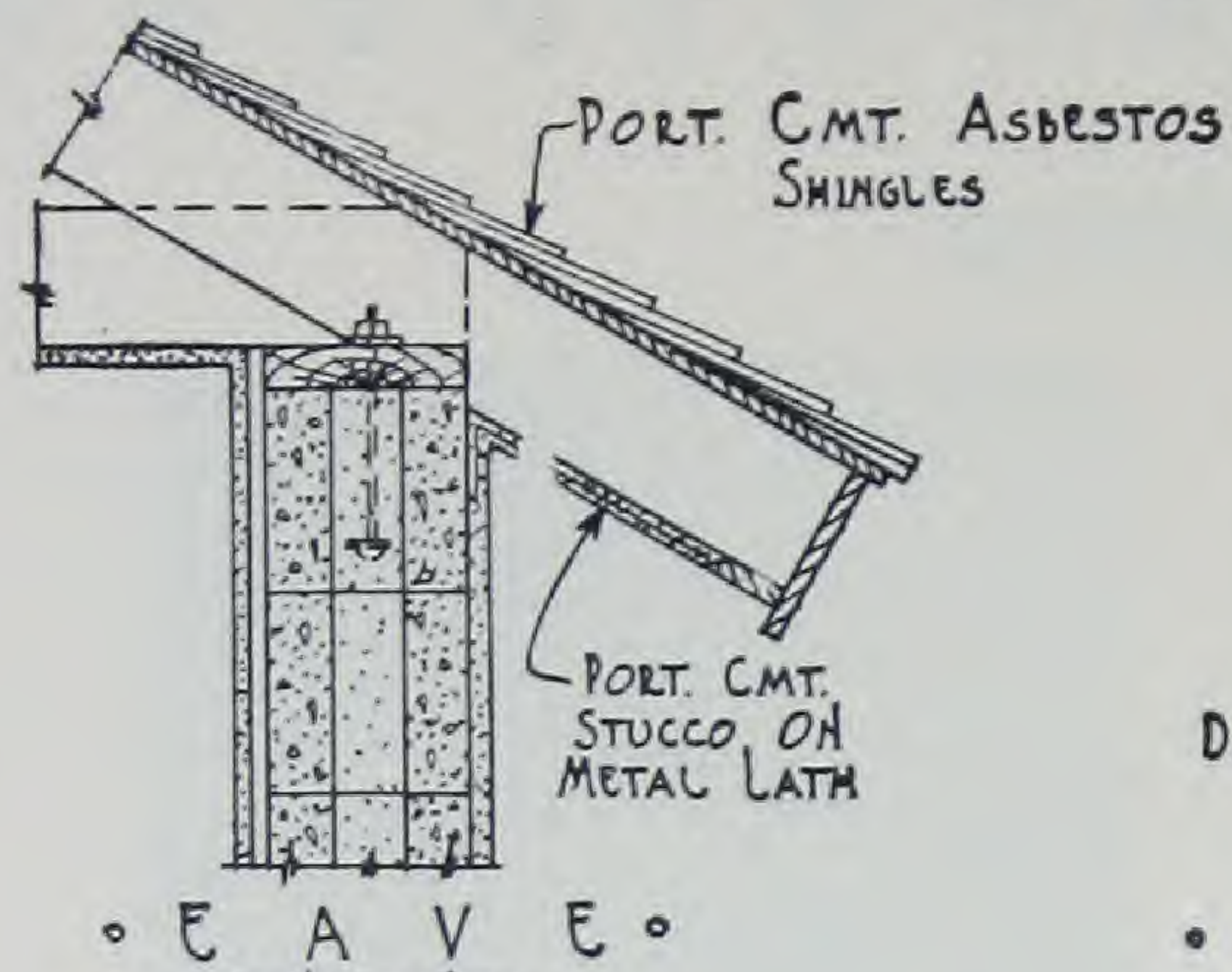
MODERN AMERICAN  
STIPPLED

A smooth surface stippled with a short-bristle brush

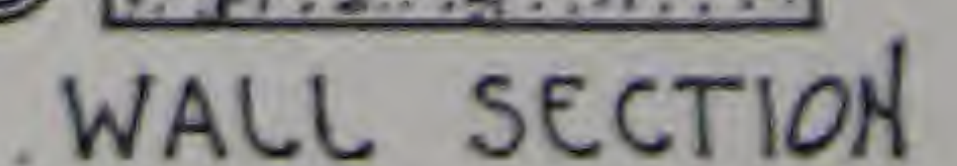
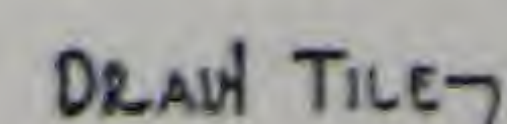
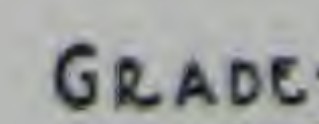
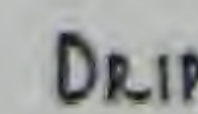
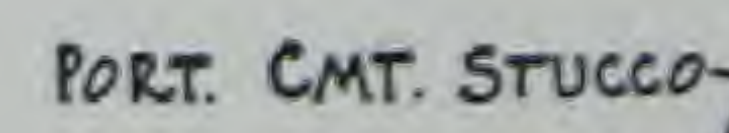
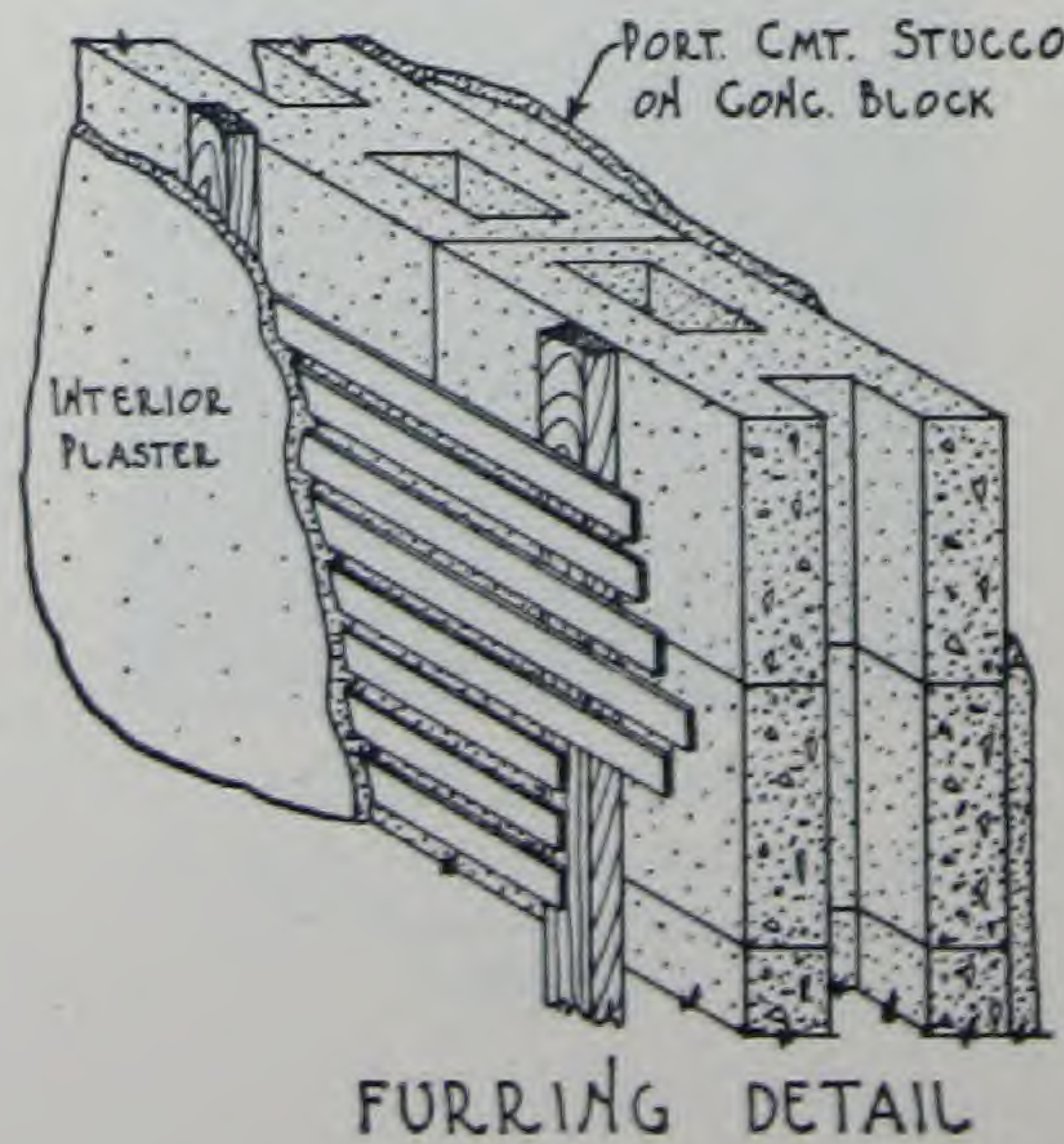
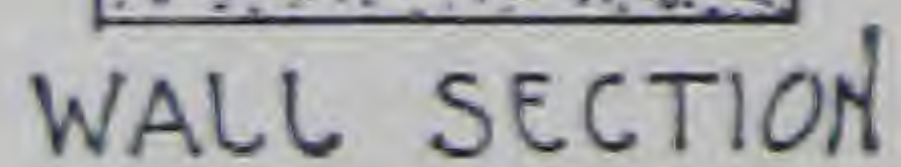
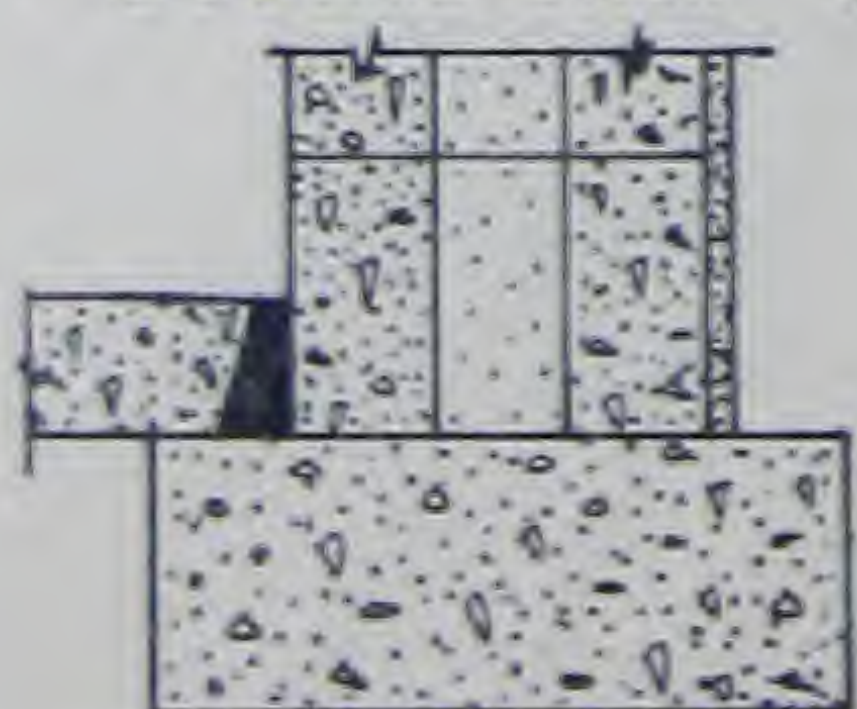
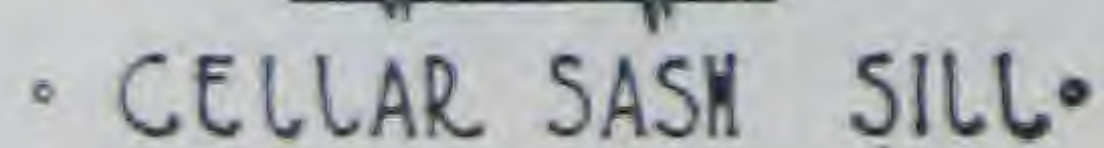
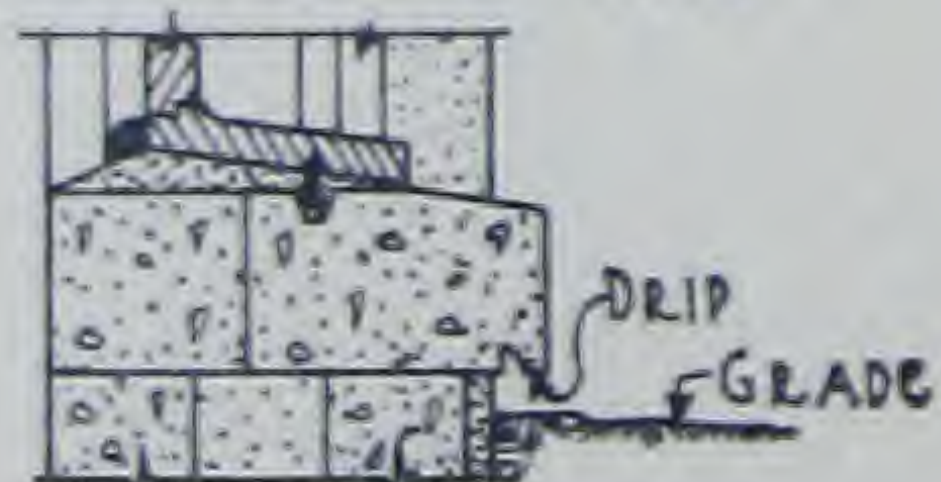
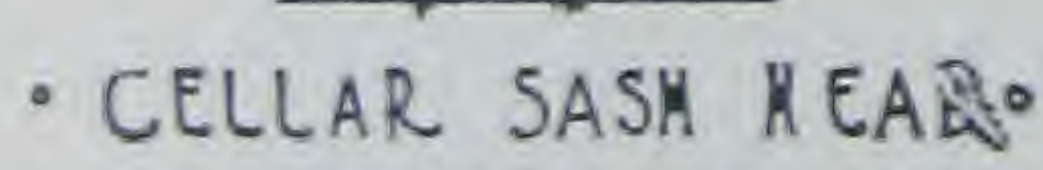
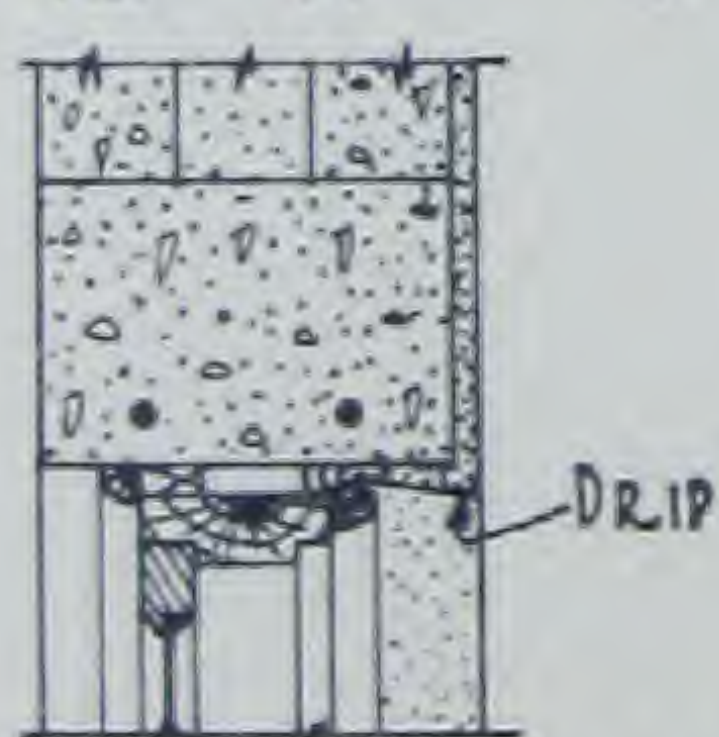
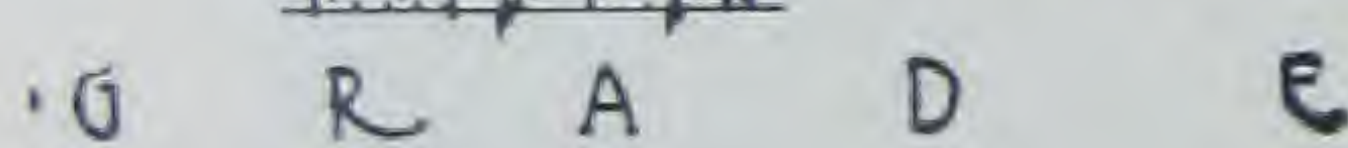
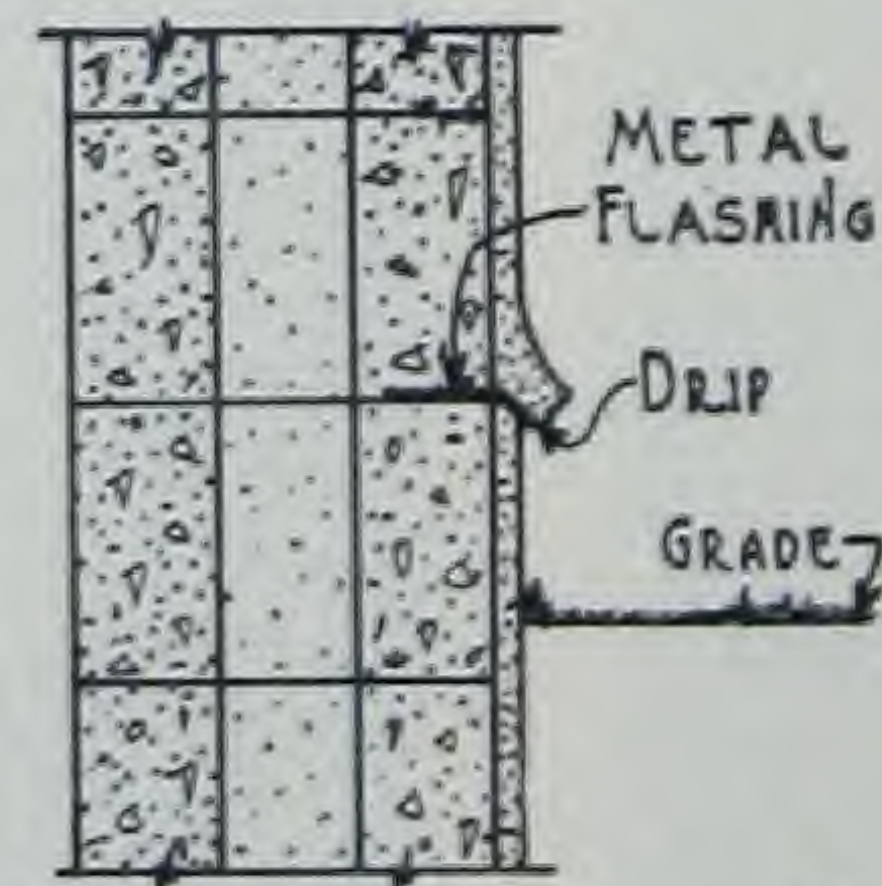
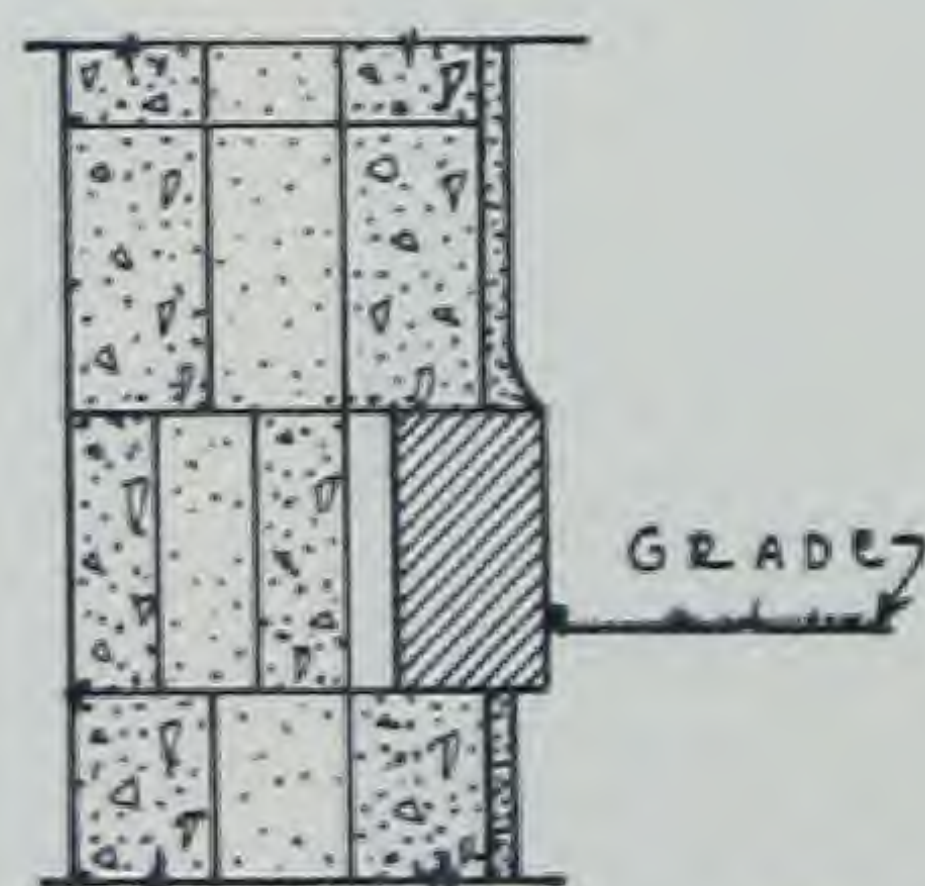
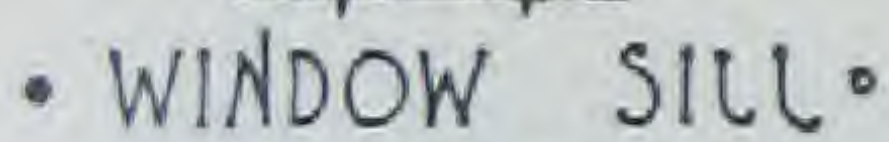


# TYPICAL CONSTRUCTION DETAILS

## Stucco on Concrete Tile and Block



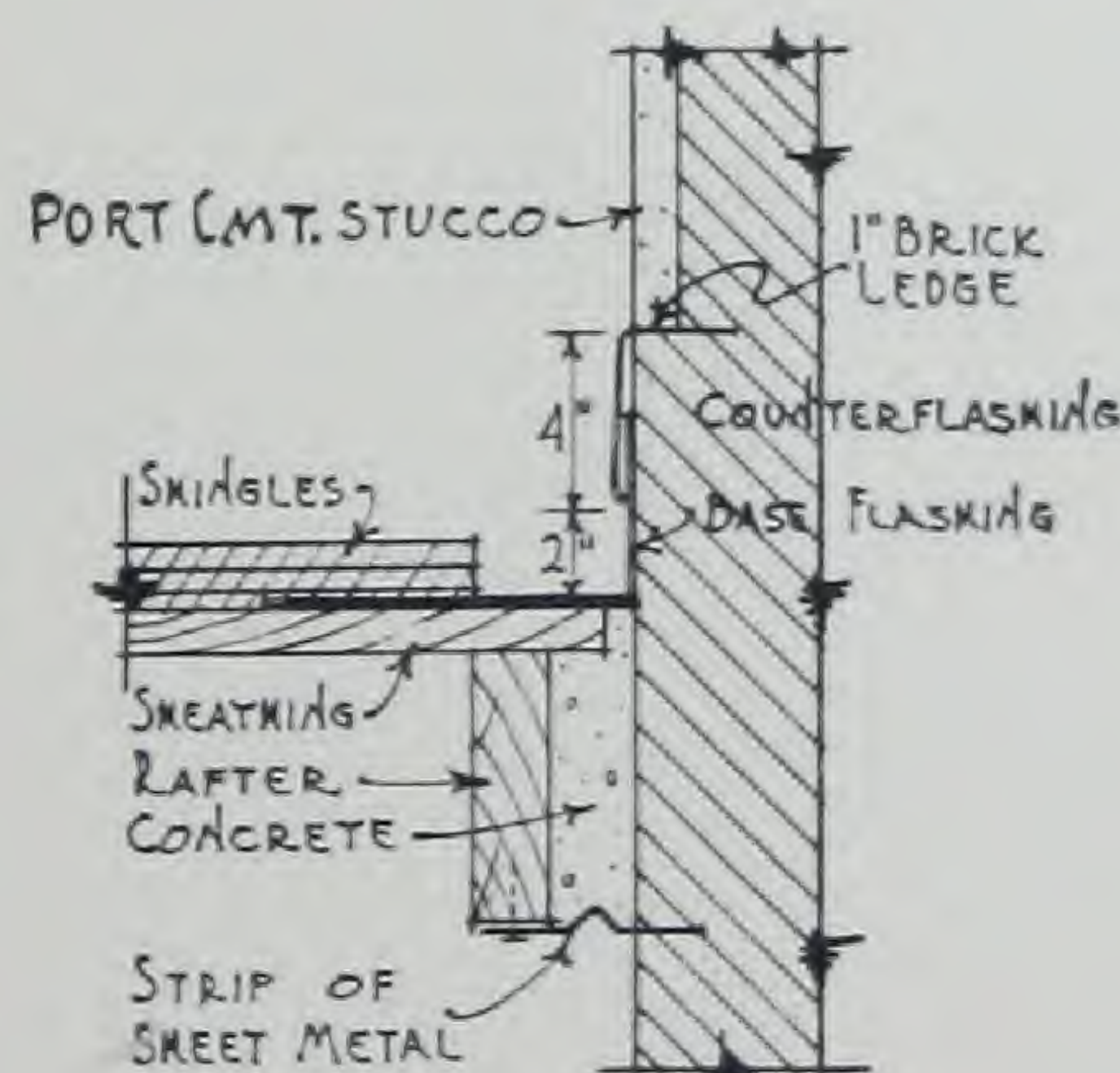
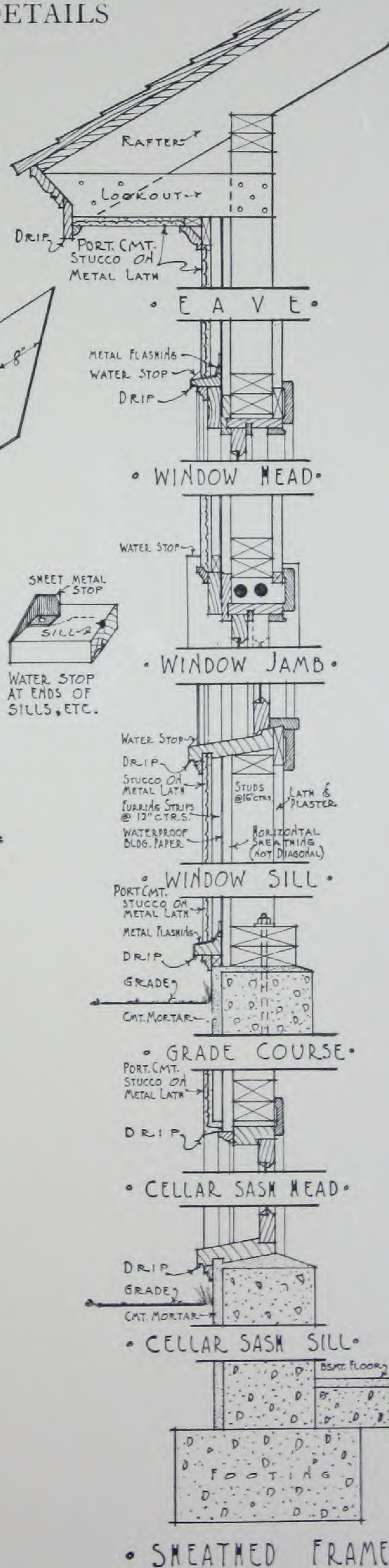
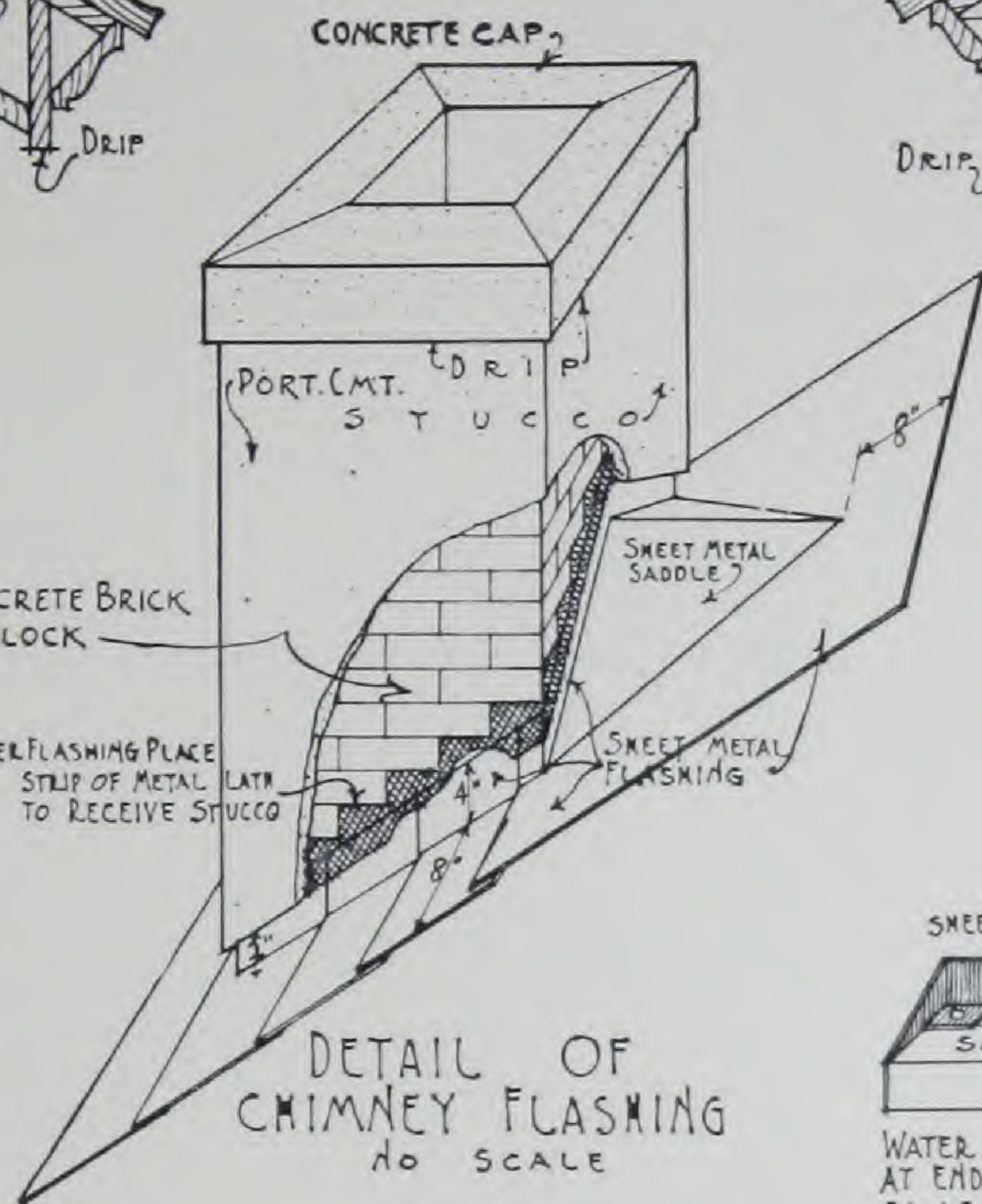
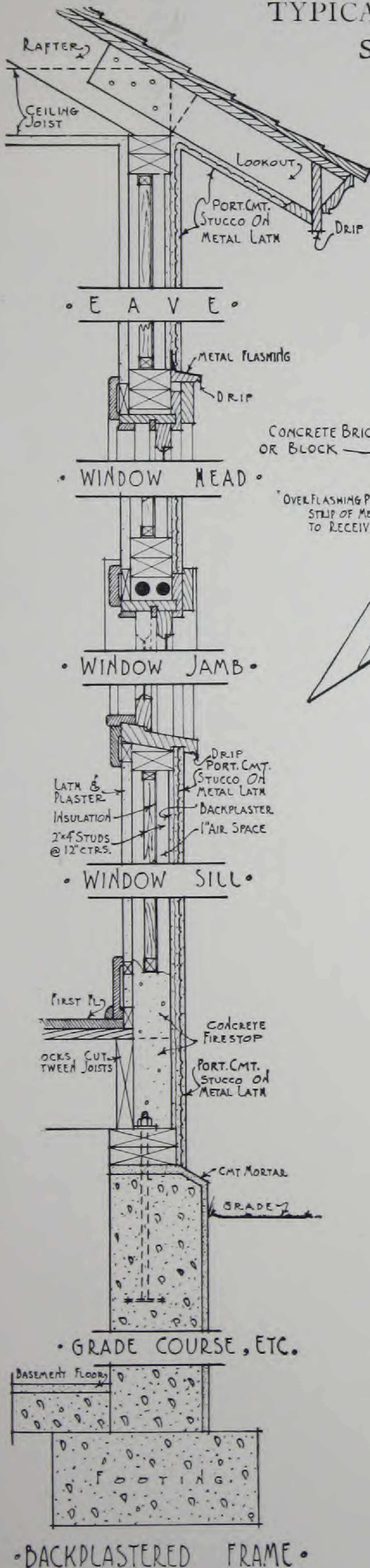
## DETAILS OF JOIST BEARINGS



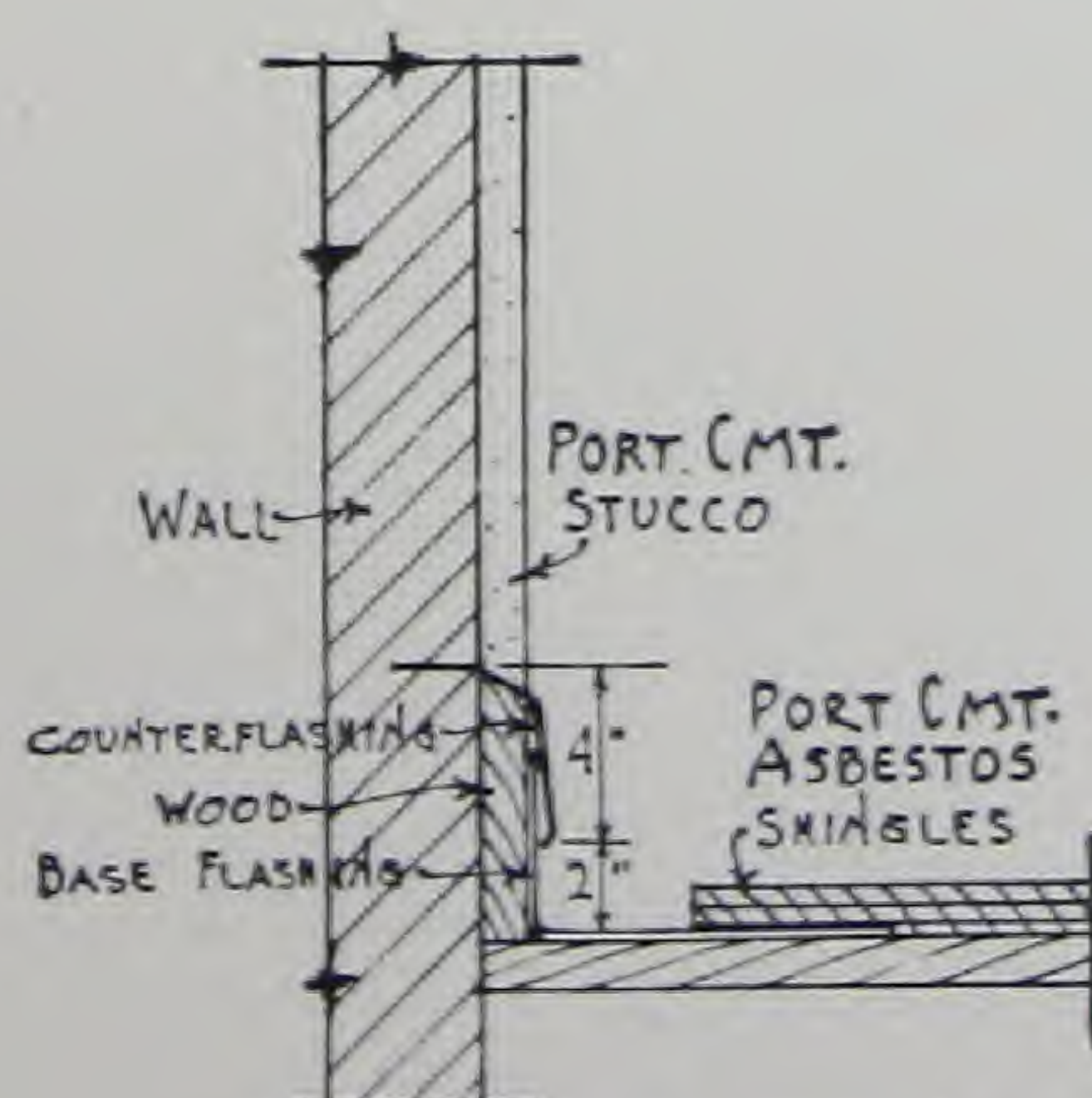


# TYPICAL CONSTRUCTION DETAILS

## Stucco on Frame Construction



- ALTERNATE DETAIL •
- FOR CHIMNEY FLASHING •
- USING COUNTERFLASHING •



- METHOD & FLASHING •
- ROOFS AGAINST WALLS •
- DORMER CHEEKS, ETC. •



## PORTLAND CEMENT ASSOCIATION

*A National Organization to Improve and Extend the Use of Concrete*

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*Concrete for Permanence*

[ Additional information concerning the preparation and application  
of portland cement concrete is available at our nearest District Office ]





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